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ARBSULT 9
AAG77909
ID AAG77
XX AAG7
XX 22-J
XX AAG7
XX Huma
XX Huma
XX Huma
XX Homo
XX
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAW71180-83 represent N-terminally truncated human lactoferrin proteins. The lactoferrin variants bind heparin with lower affinity than natural lactoferrin. The lactoferrin variants exhibit biological activities such as anti-inflammatory, anti-viral and anti-infective activities as well as a pro- and anti-coagulant effects, modulation of complement activation, inhibition of LPS mediated activation of neutrophils, inhibition of myelopoiesis, regulation of transcription, growth promotion of intestinal epithelial cells, inhibition of hydroxyl-radical formation, and a role in intestinal iron uptake and excretion. note: this sequence does not appear in the specification; it was created uing information provided
                                                                                                                                                                                                                                                                                            Key
Domain
                                                                                                                                                                                                                                                                                                                                                                                                            Compositions containing human lactoferrin and variants - a treating e.g. anaemia, iron-storage disease, inflammation, rheumatoid arthritis, ulcerative colitis or infections.
                         27-MAR-2000; 2000EP-00201110, 27-MAR-2000; 2000US-0193352P.
                                                                                                          27-MAR-2001; 2001WO-NL000253
                                                                                                                                                                                                                 WO200172322-A2
                                                                                                                                                                                                                                                                                                                                                                       Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Human lactoferrin variant hLF-3N.
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02-FEB-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WPI; 1998-437164/37.
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25. .28
/label= Cationic_dc
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0.24;
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RESULT 10
AAW71180
ID AAW71
XX AAW71
XX AAW71
XX AW71
DT 27-OC
XX Human
XX Human
XX LPS m
KW LPS m
KW intes
XX Synth
OS Homo
XX W0983
XX W0983
XX W0983
XX W0987
PR 02-FE
XX 03-FE
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XX 03-FE
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XX (PHAF
XX WPI;
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Best Local S
Matches 11
               Compositions containing human lactoferrin and variants - a treating e.g. anaemia, iron-storage disease, inflammation, rheumatoid arthritis, ulcerative colitis or infections.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              The sequence represents the human lactoferrin (hLF) protein variant hLF-3N. The invention relates to novel methods of treatment using high doses of lactoferrin. The methods of the invention are useful for the treatment or prophylaxis of infectious diseases, inflammatory diseases and excess of heparin e.g. gastroenteritis, inflammatory bowel disease, sepsis, anaemia, myelopoieses, reducing reperfusion injury, cytokine release and proteoglycan-mediated entry of virus into cells. The advantage of the method is that the patient is substantially free of side effect responses to administration of lactoferrin. Therefore large doses of lactoferrin can be administrated. Note: The present sequence is not shown in the specification but is derived from human wild-type lactoferrin sequence
                                                                             WPI; 1998-437164/37.
                                                                                                             Nuijens J,
                                                                                                                                                                          03-FEB-1997;
02-FEB-1998;
                                                                                                                                                                                                                       02-FEB-1998;
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                                                                                                                                                                                                                                                                                                                                                                               anti-infective; coagulant; complement activation; inhibition; LPS mediated activation; myelopoiesis; growth promotion; intestinal epithelial cell; hydroxyl-radical formation;
                                                                                                                                                                                                                                                                                                                                                                                                                                Human; lactoferrin protein; variant;
                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mutant human lactoferrin protein designated hLF-2N.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAW71180 standard; protein;
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                                                                                                                                                                                                                                                                                                                                                                   intestinal iron
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                                                                                                                                             (PHAR-) PHARMING BV
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                                                                                                           Van
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
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                                                                                                                                                                          97US-0036859P.
98US-00017043.
                                                                                                                                                                                                                       98WO-IB000441
                                                                                                           Berkel
                                                                                                                                                                                                                                                                                                                                                                   uptake; excretion
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Nuijens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          for treatment s of heparin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      93.3%;
91.7%;
                                                                                                             PHC;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 56; DB Pred. No. 0.24 0; Mismatches
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                                                                                                                                                                                                                                                                                                                                                                                                                                anti-inflammatory;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DB 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        .24;
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    are used

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RESULT 11
AAG77908
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Best Local S
Matches 11
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The sequence represents the human lactoferrin (hLF) protein variant hLF-2N. The invention relates to novel methods of treatment using high doses of lactoferrin. The methods of the invention are useful for the treatment or prophylaxis of infectious diseases, inflammatory diseases and excess of heparin e.g. gastroenteritis, inflammatory bowel disease, sepsis, anaemia, myelopoieses, reducing reperfusion injury, cytokine release and proteoglycan-mediated entry of virus into cells. The advantage of the method is that the patient is substantially free of side effect responses
                                                                                                                                                                                                                     WPI;
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27-MAR-2000;
                                                                                                                                                                                                                                                                                                                                                                                        04-OCT-2001
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            proteoglycan;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Human; lactoferrin; hLF; infectious disease; inflammatory disease; excess of heparin; gastroenteritis; inflammatory bowel disease; se anaemia; myelopoiesis; reperfusion injury; cytokine release;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAG77908 standard;
                                                                                                                                          Claim 10;
                                                                                                                                                                       diseases
                                                                                                                                                                                      Use
                                                                                                                                                                                                                                                  Van Bree JBMM,
                                                                                                                                                                                                                                                                                (PHAR-)
                                                                                                                                                                                                                                                                                                                                                           27-MAR-2001;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Homo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Human lactoferrin variant hLF-2N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      22-JAN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAG77908;
                                                                                                                                                                       of lactoferrin for treatment of sases and excess of heparin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               sapiens
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                                                                                                                                                                                                                                                                                PHARMING INTELLECTUAL
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                                                                                                                                        Page; 49pp; English.
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2000US-0193352P
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              hLF-2N; mutant; mutein.
                                                                                                                                                                                                                                                 Nuijens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Location/Qualifiers 26. .29
                                                                                                                                                                                                                                                                                                                                                                                                                                                    /label= Cationic_domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     93.3%;
91.7%;
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Pred. No. 0.24;
0; Mismatches
                                                                                                                                                                                                                                                                                 PROPERTY BV
                                                                                                                                                                                        infectious diseases, inflammatory
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           disease; sepsis;
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The invention describes a method of producing a heterologous polypeptide (C (I) in a grain of a plant, comprising altransformed plant (P1) (C comprising a first chimeric gene, and optionally, at least one heterologous transcription factor that is capable of enhancing the expression of the chimeric gene, to form a grain producing transforming (E plant (P2), and recovering transgenic grains containing (I) from P2. The (C plant (I) is a non-plant storage, human or non-human animal, milk or other than a milk polypeptide, antibodies, cytokines, lymphokines, (C chemokines, or cytotoxins, or anti-inflammatory molecule or intestinal (I trefoil factor (ITF) or its active fragment. Preferably, (I) is capable factor (KGF), insulin-like growth factor I (IGF-I), (C lactohedrin, kappa-casein, haptocorrin, lattoperoxidase, alpha-lactoflobilin, jeta-casein, albumin, fibrinogen or procease inhibitor. (C This is the amino acid sequence of a protein associated with method of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local S
Matches 11
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14-FEB-2001;
02-MAY-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          to administration of lactoferrin. Therefore large doses of lactoferrin can be administered. Note: The present sequence is not shown in the specification but is derived from human wild-type lactoferrin sequence given in the sequence listing of the specification
                                                                                                                                                                                                                                                                                                                                           Producing heterologous polypeptide in plant grain, by culturing transformed plant to form a grain-producing transforming plant, and recovering transgenic grains containing polypeptide from transformed
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Huang N,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Homo sapiens.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Transformed plant; heterologous transcription factor; transgenic plant;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   29-NOV-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                14-FEB-2002;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (VENT-)
                                                                                                                                                                                                                                                                                                                                                                                                                         2002-657592/70.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      protein;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                     Yang
                                                                                                                                                                                                                                                                                                Page 117; 230pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2001US-0269188P.
2001US-0269199P.
2001US-00847232.
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91.7%;
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Pred. No. 0.24;
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RESULT 13
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                                                                               The invention relates to improved feed for production animals, comprising one or more plant-derived feed ingredients, substantially unsupplemented with small-molecule antibiotics and as an additive a seed composition containing a flour, extract or malt obtained from mature monocot seeds and one or more heterologous seed-produced anti- microbial proteins in substantially unpurified form. The invention is useful as a feed for production animals such as poultry and hoofed farm animals. The present sequence is human codon optimised lactoferrin. This sequence is used in
                                                 Sequence 690 AA;
                                                                                                                                                                                                                    proteins.
                                                                                                                                                                                                                           Improved feed for production animals, comprising plant-derived feed ingredients, and seed composition containing flour, extract, or malt from mature monocot seeds and heterologous seed-produced anti-microbial
                                                                                                                                                                                                                                                                             WPI; 2002-682708/73.
N-PSDB; AAD45297.
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                                                                                                                                                                                          Example 7; Page 148-150; 175pp; English.
                                                                                                                                                                                                                                                                                                                Huang
                                                                                                                                                                                                                                                                                                                                        (VENT-) VENTRIA BIOSCIENCE.
                                                                                                                                                                                                                                                                                                                                                                                                 14-FEB-2002; 2002WO-US004919
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   Conservative
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            optimised lactoferrin.
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            93.3%;
91.7%;
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91.7%;
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 Score 56; DB
Pred. No. 0.24
0; Mismatches
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Pred. No. 0.
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RESULT 14
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Best Local Similarity
Matches 11; Conser
                                                                                                                                                                                                                                                                                                                                        The present sequence is that of human lactoferrin. The invention relates to a synthetic gene (see ARZ58122) that encodes human lactoferrin but which has codon usage designed to maximise expression in plants. Transgenic plants that express human lactoferrin in a tissue-specific manner, especially in the seeds, can be used in processes for the production of functional vegetah milk, fruit juices, fruit and/or vegetable homogenized foods (claimed). The transgenic plants are selected from solanaceae, cereals, leguminosae, fruit bearing plants and
         Human; lactoferrin; hlf; N-terminal; antimicrobial; heparin; inflammatory response; cytokine production reduction; neutrophil degranulation; myelopoiesis inhibition.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Synthetic polynucleotide encoding human lactoferrin, used for production of functional foods, vegetal milks and human lactoferrin.
                                                              Human lactoferrin (hLF).
                                                                                                                AAB97382;
                                                                                                                                     AAB97382 standard; protein; 692 AA.
                                                                                                                                                                                                                                                                                                       Sequence 692 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WPI; 2000-161129/14.
N-PSDB; AAZ58122.
                                                                                                                                                                                                                                                                                                                              horticultural plants, especially soybean,
                                                                                                                                                                                                                                                                                                                                                                                                                                                           Disclosure; Page 73-77; 93pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Fogher
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Human lactoferrin
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Pred. No. 0.24;
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Matches 11; Conservative
                                                                                                                                                                                                                   This invention relates to fragments (between 6 and 26 amino acids) of the human lactoferrin hlf protein (represented by the present sequence). Noterminal hlf peptides have antimicrobial activity. The peptides of the invention are used to treat microbial infections, especially infections by gram positive or negative bacteria, particularly listeria, Staphylococcus, Klebsiella or Escherichia species, especially Listeria, monocytogenes, S. aureus and E. coli. Other uses include reducing inflammatory response by neutralising heparin or lipopolysaccharide or by reducing cytokine production and neutrophil degranulation, inhibiting entry of viruses such as cytomegalovirus, herpes simplex virus 1 or HIV into cells, inhibiting myelopoiesis and reducing production of GM-CSF (granulocyte/macrophage colony stimulating factor)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                New polypeptides comprising the N-terminal region of human lactoferrin protein exhibit higher antimicrobial activity than the full length protein and are useful to treat bacterial infections.
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11-NOV-1999;
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                                                                                                                                                                                                                                                                                                                                                                                                                                   Claim 1; Page 55-57; 59pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WPI; 2001-335909/35.
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                                                                                                                                                                                           Sequence 692 AA;
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                                                                 341 ÁRRÁRVVWCÁVG 352
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99US-0164975P.
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/label= Cationic_domain
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referred to in the claims"
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Pred. No. 0.24;
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Listing first 45 summaries
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US-08-655-640-2
US-08-655-640-4
US-08-154-019-2
US-08-1441-333-2
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US-08-1449-167-2
US-08-1450-681-2
US-08-154-019-2
US-08-154-106-2
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US-08-156-106-2
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Sequence 4588, Ap	σ,	2, App	•	e 2,	Sequence 2, Appli	31211,	Sequence 1, Appli	Sequence 23456, A	26707,	e 4,	4	ത	Sequence 4, Appli	Ø	•	Sequence 6, Appli	-	

ALIGNMENTS

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; MOLECULE TYPE: protein US-08-724-586-2
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US-08-724-586-2
                                                                                                                               INFORMATION FOR SEQ ID NO: 1
SEQUENCE CHARACTERISTICS:
LENGTH: 694 amino acids
TYPE: amino acid
TOPOLOGY: linear
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      Query Match
Best Local Similarity
Matches 11; Conserv
                                                                                                                                                                                                                                                        ZIP: 20004

COMPUTER READABLE FORM:

MEDIUM TYPE: Floppy disk

COMPUTER: IBM PC compatible

OPERATING SYSTEM: PC-DOS/MS-DOS

SOFTWARE: PatentIn Release #1.0, Ve

CURRENT APPLICATION DATA:

APPLICATION NUMBER: US/08/724,586

FILING DATE: 30-SEPT-1996

CLASSIFICATION DATA:

APPLICATION DATA:

APPLICATION DATA:

APPLICATION DATA:

APPLICATION NUMBER: US/08/238,445

PRIOR APPLICATION DATA:

APPLICATION NUMBER: US/08/238,445

PRIOR APPLICATION DATA:

APPLICATION NUMBER: US/08/238,445

PRIOR APPLICATION NUMBER: 31,409

REGISTRATION NUMBER: 10505/P581

TELEPHONE: (202) 638-6666

TELEPHONE: (202) 638-6666
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: Gollnick, Paul D.
APPLICANT: Goyle, Darrell J.
TITLE OF INVENTION: Cloning, Expression,
TITLE OF INVENTION: Lactoferrin
NUMBER OF SEQUENCES: 8
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: Kruzel, Marian I
APPLICANT: Kurecki, Tomasz
APPLICANT: Gollnick, Paul I
APPLICANT: Doyle, Darrell (
                                                                                                                                                                                                                 **TELEPHONE: (202) 00-
TELEPHONE: (202) 393-5350
TELEPHONE: (202) 393-5350
TELEPHONE: 2:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ADDRESSEE: Jacobson, Price, Holman & Stern STREET: 400 Seventh St. N.W. CITY: Washington D.C. COUNTRY: U.S.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2, Application US/08724586
      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Kruzel, Marian L.
                           93.3%;
  Score 56; DB 3
Pred. No. 0.1;
0; Mismatches
    <u>.</u>
                                                                                                                                                                                                                                                                                                          10505/P58185C
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                                             DB 3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             and Uses of Human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                #1.25
                                             Length 694;
    Indels
    <u>,,</u>
Gaps
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343 ARRARVVWCAVG

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RESULT 3
US-09-932-190-2
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                                                                                                                                                                                               : Sequence 2, Application US/09932190 ; Patent No. 6455687 ; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 2
US-09-421-632-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 2, Application US/09421632 Patent No. 6277817
                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TELEFAX: (202) 393-5350
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
LENGTH: 694 amino acids
TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GENERAL INFORMATION:
APPLICANT: Kruzel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ZIP: 2000**
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
COMPUTER: IBM PC-DOS/MS-DOS
COMPATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FILING DATE:
ATTORNBY/AGENT INFORMATION:
NAME: Player, William E.
REGISTRATION NUMBER: 31,409
REFERENCE/DOCKET NUMBER: 10505/P58185C
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CLASSIFICATION: PRIOR APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: Kurecki, Tomasz
APPLICANT: Gollnick, Paul D.
APPLICANT: Doyle, Darrell J.
TITLE OF INVENTION: Cloning, Expression, and Uses of Human
TITLE OF INVENTION: Lactoferrin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                      Match 93.3%;
Local Similarity 91.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TELEPHONE:
CORRESPONDENCE ADDRESS:
ADDRESSEE: Jacobson, Price, Holman & Stern
STREET: 400 Seventh St. N.W.
                                                                                     APPLICANT: Kruzel, Marian L.
Kurecki, Tomasz
Gollnick, Paul D.
Doyle, Darrell J.
TITLE OF INVENTION: Cloning, Expression, and Uses of Human
                                                             NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                          343 ARRARVVWCAVG 354
                                                                                                                                                                                                                                                                                                                                                                                1 ARRARVVWAAVG 12
                                                                                                                                                                                                                                                                                                                                                                                                                     11; Conservative
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (202) 638-6666
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   08/724,586
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                                                                                 Lactoferrin
                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 56; I
                                                                                                                                                                                                                                                                                                                                                                                                                       0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                           DB 3; Length 694;
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US-08-655-640-2
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Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TELEPHONE: (202) 638-6666
TELEPAX: (202) 393-5350
INFORMATION FOR SEQ ID NO: 2:
                                                                                                                                                                            MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
CURRENT APPLICATION DATA:
FILING DATE: December 17, 1992
ATTORNEY/AGENT INFORMATION:
NAME: SCOTT, WATSON T.
REGISTRATION NUMBER: 26,581
                                                                               CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 07/992,538
                                                                                                                                                                                                                                                                       ZIP: 20005-3918
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                           CORRESPONDENCE ADDRESS:
ADDRESSEE: CUSHMAN, DARBY & CUSHMAN
STREET: 1100 NEW YORK AVE. N.W., NINTH FLOOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: Teng, Christina
APPLICANT: Panella, Timothy J.
TITLE OF INVENTION: HUMAN LACTOFERRIN
NUMBER OF SEQUENCES: 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICATION NUMBER: US/08/724,586
FILING DATE: 30-SEPT-1996
APPLICATION NUMBER: US 08/238,445
FILING DATE: 05-MAY-1994
ATTORNEY/AGENT INFORMATION:
NAME: PLAYET, William E.
REGISTRATION NUMBER: 31,409
REFERENCE/DOCKET NUMBER: 10505/P58185C
TELECOMMUNICATION INFORMATION:
                                                                                                                                                 FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                             STREET: 1100 NEW CITY: WASHINGTON
                                                                                                                                               APPLICATION NUMBER: US/0 FILING DATE: 30-MAY-1996
                                                                                                                                                                                                                                                                                                                                       COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TOPOLOGY: linear
MOLECULE TYPE: protein
SEQUENCE DESCRIPTION: SEQ ID NO: 2:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COMPUTER: IBM PC COMPATIBLE
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARB: PATENDLIN Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ZIP: 20004
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE CHARACTERISTICS:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       343 ARRARVVWCAVG 354
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USA
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FILING DATE: 17-Aug-2001
CLASSIFICATION: <Unknown>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COUNTRY: U.S.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CITY: Washington D.C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ENGTH: 694 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             93.3%;
91.7%;
                                                                                                                                                                     US/08/655,640
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US-08-655-640-4
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Best Local Similarity
Matches 11; Conserv
                                                                        Query Match
Best Local Similarity
                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GENERAL INFORMATION:
APPLICANT: Teng, Christina
APPLICANT: Penella, Timothy J.
TITLE OF INVENTION: HUMAN LACTOFERRIN
NUMBER OF SEQUENCES:
CORRESPONDENCE ADDRESS:
ADDRESSEE: CUSHMAN, DARBY & CUSHMAN
STREET: 1100 NEW YORK AVE. N.W., NINTH FLOOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TELEFAX: (202) 822-0944
TELEX: 6714627 CUSH
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
LENGTH: 705 amino acids
                                                                                                                                                                                                          TELEX: 6714627 CUSH
INFORMATION FOR SEQ ID N
                                                                                                                                                                                                                                                                                                                                                                                                                                                   COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTMARE: Patentin Release #1.0,
                                                                                                                                                                                                                                                                                                                                                                                                               SOFTWARE: Patencin CURRENT APPLICATION DATA:
CURRENT APPLICATION US/08/655,640
                                                                                                                                                                                           SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                 PRIOR APPLICATION DATA:
APPLICATION NUMBER: 07/992,538
FILING DATE: December 17, 1992
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REFERENCE/DOCKET NUMBER: WT
TELECOMMUNICATION INFORMATION:
TELEPHONE: (202) 861-3000
                                                                                                                                                                                                                                                        TELECOMMUNICATION INFORMATION: TELEPHONE: (202) 861-3000
                                                                                                                                  MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STREET: 1100
CITY: WASHINGTON
                                                                                                                                                                                                                                                                                  NAME: SCOTT, WATSON T.
REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                            APPLICATION NUMBER: US/0 FILING DATE: 30-MAY-1996 CLASSIFICATION: 435
                                                                                                                                                  TOPOLOGY:
                                                                                                                                                                                                                                        TELEFAX:
                                                                                                                                                                                                                                                       TELEPHONE:
                                                                                                                                                                               LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          358 ARRARVVWCAVG 369
360 ARRARVVWCAVG 371
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                                                                                                                                                             amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TYPE: protein
                         ARRARVVWAAVG 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Application US/08655640
                                                                                                                                                                           708 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                USA
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                                                         Conservative
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                                                                                                                                                                                                                                            822-0944
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91.7%;
                                                                        93.3%;
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                                                        Score 56; DB 2
Pred. No. 0.11;
0; Mismatches
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Pred. No. 0
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                                                                                      DB 2;
                                                           1; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1; Indels
                                                                                      Length 708;
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RESULT 6
US-08-154-019-2
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                                                                                                                                            ; MOLECULE TYPE:
US-08-154-019-2
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Best Local S
Matches 11
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                                                                                                                                                                                                                                                                                                                                                                                                                      FILING DATE: 16-NOV-1993

CLASSIFICATION: 435

PRIOR APPLICATION UNDER: US 08/461,333

FILING DATE: 05-JUN-1995

APPLICATION NUMBER: US 08/077,788

FILING DATE: 15-JUN-1993

PRIOR APPLICATION NUMBER: US 07/895,956

FILING DATE: 15-JUN-1992

PRIOR APPLICATION NUMBER: US 07/895,956

FILING DATE: 15-JUN-1992

PRIOR APPLICATION NUMBER: US 07/619,131

PRIOR APPLICATION NUMBER: US 07/619,131

FILING DATE: 27-NOV-1990

PRIOR APPLICATION NUMBER: US 07/444,745

ENTING DATE: 01-DRC-1066
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GENERAL INFORMATION:
                                                                                                                                                                                                                                                         TELEPHONE: 415-543-96
TELEFAX: 415-543-5043
INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                           NAME: Liebescheutz, Joe O.
REGISTRATION NUMBER: 37,505
REGERENCE/DOCKET NUMBER: 16
TELECOMMUNICATION INFORMATION:
TELEPHONE: 415-543-9600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SOFTWARE: PatentIn Release #1.0, Version #1.25 CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy
COMPUTER: IBM PC com
                                                                                                                                                                                                                                         SEQUENCE CHARACTERISTICS
                                                                                                                                                                                                                                                                                                                                                                                        ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TITLE OF INVENTION:
TITLE OF INVENTION:
NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CORRESPONDENCE ADDRESS:
                                                                                                                                                                              TYPE: ami
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
ODERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  COUNTRY: U
                                                                                                                                                                                                                                                                                                                                                                                                            FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ADDRESSEE:
                                                                                                                                                                                                                        LENGTH:
358 ARRARVVWCAVG 369
                                 1 ARRARVVWAAVG 12
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T: One Market Plaza, Steuart Tower, Suite 2000
San Francisco
California
                                                                                       Similarity
                                                                                                                                                                                            amino acid
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                                                                                                                                                                                                                      709 amino acids
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Heyneker, Herbert L.
Platenburg, Gerald
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Krimpenfort, Paul J.A.
KRIMPENFORT, Paul J.A.
VRNTION: Production of Recombinant Polypeptides
                                                                       Conservative
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                                                                                                                                                                                    linear
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                                                                                       93.3%;
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                                                                   Score 56; DB 1; Length 709; Pred. No. 0.11; o; Mismatches 1; Indels
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RESULT 7 US-08-461-333-2

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Matches
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Patent No.
                                                                                                                                                                                                                                                                              Query Match.
                                                                                                                                                                                                                                                                                                                                                                                                  TELEFAX: 415-543-5043
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICATION NUMBER: US 08/
FILING DATE: 15-UN-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/
FILING DATE: 15-UN-1992
PRIOR APPLICATION DATA:
APPLICATION UNMBER: US 07/
FILING DATE: 27-NOV-1990
                                                                                                                                                                                                                                                                                                                                                                                                                                                      REFERENCE/DOCKET NUMBER: 16
TELECOMMUNICATION INFORMATION:
TELEPHONE: 415-543-9600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CLASSIFICATION: 800
PRIOR APPLICATION DATA:
PRIOR APPLICATION UNBER: US 08/077,788
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SOPTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/461,333
FILING DATE: 05-JUN-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CORRESPONDENCE ADDRESS:
ADDRESSEE: Townsend and Townsend and Crew
STREET: One Market Plaza, Steuart Tower, Suite 2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: Platenburg, Gerald
APPLICANT: Lee, Sang He
APPLICANT: Pieper, Frank
APPLICANT: Pieper, Frank
APPLICANT: Krimpenfort, Paul J.A.
TITLE OF INVENTION: Production of Recombinant Polypeptides
TITLE OF INVENTION: by Bovine Species and Transgenic Methods
                                                                                                                                                                                                                                                                                                                                  MOLECULE TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FILING DATE: 01-DEC-1989
ATTORNEY/AGENT INFORMATION:
NAME: Liebescheutz, Joe O.
REGISTRATION NUMBER: 37,505
 APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FILING DATE: 27-NOV-:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT:
                                                                                                                                                                                                                                           Local Similarity 91.7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                      TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                  LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    COUNTRY:
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5741
محب
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: California
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amino acid 
GY: linear
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                                                                                                                                                                                                         ARRARVVWAAVG 12
                                                                                       Application US/08464167
Strijker, Rein
Heyneker, Herbert L.
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Heyneker, Herbert L.
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                                   Deboer, Herman A.
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                                                                                                                                                                                                                                           Score 56; DB 1; Length 709; Pred. No. 0.11; 0; Mismatches 1; Indels
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                                                                                                                                                                                          Sequence 2,
Patent No. 6
                                                                                                                                                                                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local S
                                                                                                                              GENERAL INFORMATION:
APPLICANT: Deboer,
APPLICANT: Strijke
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FILING DATE: 15-JUN-1992

PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/619,131
FILING DATE: 27-NOV-1990

PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/444,745
FILING DATE: 01-DEC-1989
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TELEFAX: 415-543-5043 INFORMATION FOR SEQ ID NO:
                                    APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
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COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            REFERENCE/DOCKET NUMBER: 16 TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FILING DATE: 15-JUN-1993 PRIOR APPLICATION DATA: APPLICATION NUMBER: US 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CURRENT APPLICATION DATA: APPLICATION NUMBER: US
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ADDRESSEE: Townsend and Townsend and Crew
STREET: One Market Plaza, Steuart Tower, Suite 2000
CITY: San Francisco
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: Pieper, Frank
APPLICANT: Krimpenfort, Paul J.A.
TITLE OF INVENTION: Production of Recombinant Polypeptides
TITLE OF INVENTION: by Bovine Species and Transgenic Methods
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CLASSIFICATION: 800 PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LENGTH: 709 amino acids
TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NAME: Liebescheutz, Joe O. REGISTRATION NUMBER: 37,50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
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CANT: Pieper, Frank
CANT: Krimpenfort, Paul J.A.
OF INVENTION: Production of Recombinant Polypeptides
OF INVENTION: by Bovine Species and Transgenic Methods
                                                                                                                                                                                                                                                                                                      358 ARRARVVWCAVG 369
                                                                                                                                                                                                                                                                                                                                                                                11;
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                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
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                                                              Strijker, Rein
Heyneker, Herbert L.
Platenburg, Gerald
Lee, Sang He
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Lee, Sang He
                                                                                                                                                    Deboer, Herman A.
                                                                                                                                                                                                                                                                                                                                                                                Conservative
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91.7%;
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                                                                                                                                                                                                                                                                                                                                                                                                  Score 56; DB 3;
Pred. No. 0.11;
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CORRESPONDENCE ADDRESS:
ADDRESSEE: Townsend and Townsend and Crew
STREET: One Market Plaza, Steuart Tower, &
CITY: San Francisco

Tower, Suite 2000

California

NUMBER OF SEQUENCES:

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В
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US-08-476-798-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ; MOLECULE TYPE: protein US-09-158-313-2
                                                                                                                                                                                     GENERAL INFORMATION:
APPLICANT: Deboer,
APPLICANT: Strijke;
APPLICANT: Heyneke
APPLICANT: Platenb
APPLICANT: Lee, Sa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
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APPLICATION NUMBER: US 07/895,956

FILING DATE: 15-JUN-1992

PRIOR APPLICATION DATA:

APPLICATION NUMBER: US 07/619,131

FILING DATE: 27-NOV-1990

PRIOR APPLICATION DATA:

APPLICATION UMBER: US 07/444,745

FILING DATE: 01-DEC-1999

ATTORNEY/AGENT INFORMATION:

NAME: Liebescheutz, Joe 00.

REGISTRATION NUMBER: 37,505

REFERENCE/DOCKET NUMBER: 16994-003125

TELECOMMUNICATION INFORMATION:

TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TELEFAX: 415-543-5043
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
LENGTH: 709 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRIOR APPLICATION DATA:
APPLICATION NUMBER:
FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/158,313
                                                                               APPLICANT: Platenburg, Gerald
APPLICANT: Lee, Sang He
APPLICANT: Plaper, Frank
APPLICANT: Krimpenfort, Paul J.A.
TITLE OF INVENTION: Production of Recombinant Polypeptides
TITLE OF INVENTION: by Bovine Species and Transgenic Methods
NUMBER OF SEQUENCES: 38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COMPUTER READABLE FORM:

MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                             CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FILING DATE: CLASSIFICATION:
ADDRESSEE: Townsend and Townsend and Crew STREET: One Market Plaza, Steuart Tower, Suite 2000 CITY: San Francisco
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                          358 ARRARVVWCAVG 369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    H: 709 amino acids amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ARRARVVWAAVG 12
                                                                                                                                                                                                                                                                                                                                  Application US/08476798
                                                                                                                                                                                                      Strijker, Rein
Heyneker, Herbert L.
Platenburg, Gerald
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
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US-08-145-681-2
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NAME: Liebescheutz, Joe O.
REGISTRATION NUMBER: 37,505
REFERENCE/DOCKET NUMBER: 1699.
TELECOMMUNICATION INFORMATION:
TELEPHONE: 415-543-960
TELEPEAX: 415-543-5043
INFORMATION FOR SEQ ID NO: 2:
                                                                                                                                                                                                                                                                                                                                                                                                Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                               Sequence
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Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COUNTRY: USA
ZIP: 94105
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy d.
COMPUTER: IBM PC comp.
           COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRIOR APPLICATION DATA:
PRIOR APPLICATION NUMBER: US 07/895,956
FILING DATE: 15-UN-1992
                                                                                                                                                                                                                                               APPLICANT: May, Gregory S.
TITLE OF INVENTION: Product
TITLE OF INVENTION: and Lac
TITLE OF INVENTION: Various
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FILING DATE: 15-JUN-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/619,131
FILING DATE: 27-NOV-1990
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/444,745
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FILING DATE: 07-JUN-1995
CLASSIFICATION: 800
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/077,788
FILING DATE: 15-JUN-1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SOFTWARE: PatentIn Release #1.0, Version CURRENT APPLICATION DATA: APPLICATION NUMBER: US/08/476,798
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FILING DATE: 01-DEC-1989 ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                      APPLICANT:
                                                                                                                                                                                                                                                                                                                                          APPLICANT:
                                                                                                                                                                                                                CORRESPONDENCE ADDRESS:
CURRENT APPLICATION DATA:
                                                                                                                                       STREET: 910 Lon
CITY: Houston
STATE: Texas
                                                                                                                                                                                                                                   NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                         COUNTRY: U
ZIP: 77002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LENGTH:
                                                                                                                                                                                             ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         358 ARRARVVWCAVG 369
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5. 5571691
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                                                                                                                                                                                                                                                                                                                                                                               INFORMATION:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    : 709 amino acids amino acid
                                                                                                                                                                              E: Baker & Botts, L.L.P.
910 Louisiana St
                                                                                                                                                                                                                                                                                                                   Conneely, Orla M. Headon, Denis R. O'Malley, Bert W.
                                                                                                                        ASU
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91.7%;
                                                                                                                                                                                                                                                Production of Recombinant Lactoferrin and Lactoferrin Polypeptides Using cD Various Organsims
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                 Version #1.25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB 3;
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                                                                                                                                                                                                                                                                     cDNA Sequences
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RESULT 12
US-08-250-308-2
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Tocal Similarity
Conserv
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Patent No. 5571896
Patent No. 5571896
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TELEFAX: 713/229/1522
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
                                                                                                       FILING DATE:
CLASSIFICATION: 530
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/873,304
FILING DATE: 24-APR-1992
ATTORNEY/AGENT INFORMATION:
NAME: Adler Ph.D., Benjamin A.
REGISTRATION NUMBER: 35,423
REFERENCE/DOCKET NUMBER: D5456
TELEFAX: 7136515246
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTURERISTICS:
LENGTH: 711 amino acids
                                                                                                                                                                                                                                                                       COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: HM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/250,308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ANTI-SENSE: NO ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MOLECULE TYPE: protein HYPOTHETICAL: YES
                                                                         TELECOMMUNICATION INFORMATION: TELEPHONE: 7136515587
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT: Headon, Denis R.
APPLICANT: O'Malley, Bert W.
TITLE OF INVENTION: Production of Recombinant Human
TITLE OF INVENTION: Lactoferrin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      HYPOTHETICAL:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NAME: McGregor, Martin L.
REGISTRATION NUMBER: 29,329
REFERENCE/DOCKET NUMBER: 19
                                                                                                                                                                                                                                                                                                                                                                                                                                                            CITY: Houston
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICATION NUMBER: FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                   COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TELEPHONE:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     360 ARRARVVWCAVG 371
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           INFORMATION:
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1301 McKinney St.
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713/229/1522
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91.7%;
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; MOLECULE TYPE: US-08-154-019-4
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Patent No. 5
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Best Local (
                                                                                     TELEFAX: 415-543-5043
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                   APPLICATION NUMBER: US 07/895,956
FILING DATE: 15-JUN-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/619,131
FILING DATE: 27-NOV-1990
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SOFTWARE: Patentin Rel
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ZIP: 94105
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                               APPLICATION NUMBER: US 0:
FILING DATE: 01-DEC-1989
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CLASSIFICATION: 435
PRIOR APPLICATION NUMBER: U
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CORRESPONDENCE ADDRESS:
ADDRESSEE: Townsend and Townsend and Crew
STREET: One Market Plaza, Steuart Tower, Suite 2000
                                                                                                                                                                                                                                                                                                                                                                                             FILING DATE: 15-JUN-
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: Pieper, Frank
APPLICANT: Krimpenfort, Paul J.A.
TITLE OF INVENTION: Production of Recombinant Polypeptides
TITLE OF INVENTION: by Bovine Species and Transgenic Methods
                                                                                                                                            TELECOMMUNICATION INFORMATION:
TELEPHONE: 415-543-9600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COMPUTER: IBM PC
OPERATING SYSTEM:
                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICATION NUMBER: US 08/461,333
FILING DATE: 05-JUN-1995
APPLICATION NUMBER: US 08/077,788
                            TOPOLOGY: linear
                                                                                                                                                                                             NAME: Liebescheutz, Joe O. REGISTRATION NUMBER: 37,505
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Local Similarity
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                                                                                                                                          TELEPHONE:
                                                                                                                                                                              REFERENCE/DOCKET NUMBER: 16994-003123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FILING DATE:
                                                                      LENGTH:
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                                                                    711 amino acids
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Lee, Sang He
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Heyneker, Herbert L.
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SYSTEM: PC-DOS/MS-DOS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Release #1.0, Version #1.25
                                                                                                                                                                                                                                                                       US 07/444,745
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Pred. No. 0.11;
0; Mismatches
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RESULT 14 US-08-461-333-4

Patent No.

Application US/08461333

GENERAL INFORMATION:

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360 ARRARVVWCAVG 371

Matches

11; Conservative

ARRARVVWAAVG 12

Query Match Best Local Similarity

93.3%; 91.7%;

Score 56; DB 1; Pred. No. 0.11; 0; Mismatches

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0,

Gaps

Length 711; Indels

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; MOLECULE TYPE:
US-08-461-333-4
                                          Matches
                                                                  Query Match
                                                                                                                                            TELEFAX: 415-543-5043
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
LENGTH: 711 amino acids
                                                                                                                                    TYPE: &
                                        Local Similarity
nes 11; Conserv
                                                                                                                       TOPOLOGY:
1 ARRARVVWAAVG 12
                                                                                                                                 amino acid
                                          Conservative
                                                                                                       protein
                                                   93.3%;
                                        Score 56; DB 1; Length 711; Pred. No. 0.11; 0; Mismatches 1; Indels
                                          0
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CLASSIFICATION: 800
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/077,788
FILING DATE: 15-UUN-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/895,956
FILING DATE: 15-UUN-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/619,131
FILING DATE: 27-NOV-1990
PRIOR APPLICATION NUMBER: US 07/444,745
APPLICATION NUMBER: US 07/444,745
FILING DATE: 01-DEC-1989
ATTORNEY/AGENT INFORMATION:

TELECOMMUNICATION INFORMATION: TELEPHONE: 415-543-9600

4.

NAME: Liebescheutz, Joe O.
REGISTRATION NUMBER: 37,505
REFERENCE/DOCKET NUMBER: 16994-003123

COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/461,333
FILING DATE: 05-UN-1995

CORRESPONDENCE ADDRESS:
ADDRESSEE: Townsend and Townsend and Crew
STREET: One Market Plaza, Steuart Tower, Suite 2000
CITY: San Francisco

California

USA

APPLICANT: Krimpenfort, Paul J.A.
TITLE OF INVENTION: Production of Recombinant Polypeptides
TITLE OF INVENTION: by Bovine Species and Transgenic Methods
NUMBER OF SEQUENCES: 38

Lee, Sang He Pieper, Frank Platenburg,

Strijker, Rein Heyneker, Herbert L. Deboer, Herman A.

Gerald

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US-08-453-703-2
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Search completed: September 1, 2004, 00:18:41 Job time: 8.76 secs
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                                                                                                                                              Matches
                                                                                                                                                                Best Local Similarity.
                                                                                                                                                                                 Query Match
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COMPUTER READABLE FORM:

MEDIUM TYPE: Floppy disk

COMPUTER: IBM FC compatible

COMPUTER: IBM FC compatible

OPERATING SYSTEM: PC-DOS/MS-DOS

SOFTWARE: PatentIN Release #1.0, VG

CURRENT APPLICATION DATA:

APPLICATION UMBER: US/08/453,703

APPLICATION CONCURRENTLY herewith
                                                                                                                                                                                                                                                                                                                                                                                                                                                     CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/145,68
FILING DATE: October 28, 1993
ATTORNEY/AGENT INFORMATION:
NAME: Albert P. Halluin
REGISTRATION NUMBER: 25,227
REFERENCE/DOCKET NUMBER: 8206
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                      TELEPHONE: 415-854-366
TELEFAX: 415-854-3694
INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: Conneely, Orla M.
APPLICANT: Headon, Denis R.
APPLICANT: O'Malley, Bert W.
APPLICANT: May, Gregory S.
TITLE OF INVENTION: Product:
TITLE OF INVENTION: and Lact
TITLE OF INVENTION: Various
NUMBER OF SEQUENCES: 14
                                                                                                                                                                                                                                  TOPOLOGY: linear
MOLECULE TYPE: protein
HYPOTHETICAL: YES
ANTI-SENSE: NO
ORIGINAL SOURCE:
ORGANISM: H. sapiens
                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE CHARACTERISTICS:
LENGTH: 711 amino acids
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1155 Avenue of the Americas
                                                                                                                                                                                                                                                                                                                                                                                                                            415-854-3660
415-854-3694
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                                                                                                                                              Conservative
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                                                                                                                                                              93.3%;
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                                                                                                                                              Score 56; DB Pred. No. 0.11 0; Mismatches
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                                                                                                                                                                0.11;
                                                                                                                                                                               DB 1;
                                                                                                                                                                               Length 711;
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Result
No.
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Maximum DB
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Maximum Match 100%
Listing first 45 su
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Perfect score:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                            Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  seq length: 0
seq length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Published Applications AA:*

1: /cgn2_6/ptodata/2/pubpaa/US07_NEW_PUB.pep:*

2: /cgn2_6/ptodata/2/pubpaa/US06_NEW_PUB.pep:*

3: /cgn2_6/ptodata/2/pubpaa/US06_NEW_PUB.pep:*

4: /cgn2_6/ptodata/2/pubpaa/US06_PUBCOMB.pep:*

5: /cgn2_6/ptodata/2/pubpaa/US08_PUBCOMB.pep:*

6: /cgn2_6/ptodata/2/pubpaa/US08_NEW_PUB.pep:*

7: /cgn2_6/ptodata/2/pubpaa/US08_PUBCOMB.pep:*

8: /cgn2_6/ptodata/2/pubpaa/US08_PUBCOMB.pep:*

9: /cgn2_6/ptodata/2/pubpaa/US09E_PUBCOMB.pep:*

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11: /cgn2_6/ptodata/2/pubpaa/US09E_PUBCOMB.pep:*

13: /cgn2_6/ptodata/2/pubpaa/US09E_PUBCOMB.pep:*

14: /cgn2_6/ptodata/2/pubpaa/US09E_PUBCOMB.pep:*

15: /cgn2_6/ptodata/2/pubpaa/US09E_PUBCOMB.pep:*

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17: /cgn2_6/ptodata/2/pubpaa/US10E_PUBCOMB.pep:*

16: /cgn2_6/ptodata/2/pubpaa/US10E_PUBCOMB.pep:*

17: /cgn2_6/ptodata/2/pubpaa/US10E_PUBCOMB.pep:*

18: /cgn2_6/ptodata/2/pubpaa/US10E_PUB.pep:*

19: /cgn2_6/ptodata/2/pubpaa/US10E_PUB.pep:*

19: /cgn2_6/ptodata/2/pubpaa/US10E_PUB.pep:*

10: /cgn2_6/ptodata/2/pubpaa/US10E_PUB.pep:*
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Match Length
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60
1 ARRARVVWAAVG 12
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       GenCore version 5.1.6 Copyright (c) 1993 - 2004 Compugen Ltd
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1, 2004, 00:15:50 ; Search time 27.36 Seconds (without alignments)
137.988 Million cell updates/sec
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                                                                US-10-169-297-49
US-10-076-816-4
US-10-077-381-4
US-10-639-835-4
US-10-639-835-4
US-10-169-297-9
US-10-170-221-4
US-10-341-434-218
US-10-440-464-69
US-10-408-765A-2000
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Sequence 49, Appli
Sequence 4, Appli
Sequence 4, Appli
Sequence 2, Appli
Sequence 2, Appli
Sequence 2, Appli
Sequence 40, Appli
Sequence 202, Appli
Sequence 218, Appli
Sequence 218, Appli
Sequence 218, Appli
Sequence 35, Appli
Sequence 37, Appli
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-09-978-544A-35	US-09-978-299A-358	-09-999-829A-35	-09-978-194A-35	-09-978-681A-35	-09-978-188A-35	-09-978-298A-35	-09-978-375A-35	-09-978-643A-35	-09-978-187B-35	-09-978-757A-35	-09-999-830A-35	-09-978-193A-35	-09-978-423A-35	-09-918-585A-35	-09-978-824-358	-09-981-915A-35	-09-999-833A-35	-09-978-564A-35	-09-978-403A-35	-09-978-191A-3	-09-978-585A-35	-09-978-608A-35	-09-978-189-35	-09-999-832A-35	-978-192A-35	-09-978-697-35	-09-978-295A-35	S-10-437-963-11337	S-10-437-963-15	
equence 358	Sequence 358, App	equence 358,	equence 358,	equence 358,	equence 358,	equence 358	equence 358,	quence 358,	equence 358,	equence 358,	Sequence 113:	equence 1513																		

ALIGNMENTS

RESULT 1 US-10-169-297-49

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APPLICANT: Tohdoh, Naoki
APPLICANT: Murata, Masashi
APPLICANT: Enjoji, Takashi
TITLE OF INVENTION: Preventives and Remedies for Chronic
TITLE OF INVENTION: Hepathtis
FILE REFERENCE: 3435.1000-000
CURRENT APPLICATION NUMBER: US/10/169,297
CURRENT FILING DATE: 2002-10-31
PRIOR APPLICATION NUMBER: PCT/JP00/09393
PRIOR FILING DATE: 2000-12-28
PRIOR FILING DATE: 1999-12-28
NUMBER OF SEQ ID NOMER: 1999-12-28
SEQ ID NO 4
SEQ ID NO 4
SEQ ID NO 5
SEQ ID NO 5
SEQ ID NO 5
TYPE: PRIOR FILING DATE: 1999-12-28
CRANISM: Homo sapiens
US-10-169-297-49
                                     RESULT 2
US-10-076-816-4
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                                                                                                              В
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Sequence 4, Application US/10076816 Publication No. US20030056244A1
                                                                                                                                                                            Query Match
Best Local Similarity 91.7
Matches 11; Conservative
                                                                                                              114 ARRARVVWCAVG 125
                                                                                                                                            1 ARRARVVWAAVG 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Application US/10169297
                                                                                                                                                                                                       93.3%;
                                                                                                                                                                                      Score 56; DB
Pred. No. 0.19
0; Mismatches
                                                                                                                                                                                                       DB 14; Length 359;
0.19;
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US-10-639-835-4
                   RESULT 4
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; TYPE: PRT
; ORGANISM: Homo sapiens
US-10-077-381-4
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US-10-077-381-4
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Matches
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APPLICANT: Huang, Ning
Podrquez, Raymond
                                                                                                                                                                    Matches
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 4, Application US/10077381
Publication No. US20030074700A1
                                                                                                                                                                                                       Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                     PRIOR APPLICATION NUMBER: US 60/269,199
PRIOR FILING DATE: 2001-02-14
PRIOR APPLICATION NUMBER: US 09/847,232
PRIOR FILING DATE: 2001-05-02
PRIOR APPLICATION NUMBER: US 60/266,929
PRIOR FILING DATE: 2001-02-06
PRIOR FILING DATE: 2001-02-06
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: Rodřiguez, Raymond
APPLICANT: Hagie, Frank E.
TITLE OF INVENTION: Expression of Human Milk Proteins in
TITLE OF INVENTION: Transgenic Plants
FILE REFERENCE: 50665-8022.US00
CURRENT APPLICATION NUMBER: US/10/077,381
CURRENT FILING DATE: 2002-02-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRIOR FILING DATE: 2001-02-06
PRIOR APPLICATION NUMBER: US 60/201,182
PRIOR FILING DATE: 2000-05-02
NUMBER OF SEQ ID NOS: 60
SOPTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRIOR APPLICATION NUMBER: US 60/269,188
PRIOR TILING DATE: 2001-02-14
PRIOR APPLICATION NUMBER: US 09/847,232
PRIOR FILING DATE: 2001-05-02
PRIOR APPLICATION NUMBER: US 60/266,929
PRIOR FILING DATE: 2001-05-02
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT: Hagie, Frank E.
TITLE OF INVENTION: Feed Additive Compositions and Methods
FILE REFERENCE: 5065-8021, US00
CURRENT APPLICATION NUMBER: US/10/076,816
CURRENT FILING DATE: 2002-02-14
                                                                                                                                                                                                                                                                                                                                                                           PRIOR APPLICATION NUMBER: US 60/201,182
PRIOR FILING DATE: 2000-05-02
NUMBER OF SEQ ID NOS: 33
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT: Huang, Ning
APPLICANT: Rodriguez,
APPLICANT: Hagie, Fran
                                                                                                                                                                                                                                                                                                                                                     SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LENGTH: 690
TYPE: PRT
ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                    ID NO 4
                                                                                                                                                                                     Local
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                                                                                  339 ARRARVVWCAVG 350
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                                                                                                                   1 ARRARVVWAAVG 12
                                                                                                                                                                  l Similarity 91.7
11; Conservative
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                                                                                                                                                                                     93.3%;
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91.7%; Pred. No. 0.35;
tive 0; Mismatches
                                                                                                                                                                  Score 56; DB 1
Pred. No. 0.35;
0; Mismatches
                                                                                                                                                                                                       DB 14; Length 690;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRIOR APPLICATION NUMBER: US 10/077,381
PRIOR FILING DATE: 2002-02-14
PRIOR PELICATION NUMBER: US 60/269,199
PRIOR PELING DATE: 2001-02-14
PRIOR PELING DATE: 2001-02-14
PRIOR APPLICATION NUMBER: US 09/847,232
PRIOR FILING DATE: 2001-05-02
PRIOR APPLICATION NUMBER: US 60/266,929
PRIOR PILING DATE: 2001-02-06
PRIOR PILING DATE: 2001-02-06
PRIOR PILING DATE: 2000-05-02
PRIOR PILING DATE: 2000-05-02
PRIOR PILING DATE: 2000-05-02
PRIOR PILING DATE: 2000-05-02
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Best Local Similarity
Matches 11; Conserv
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Publication No. US20020160941A1
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SOFTWARE: FastSEQ for Windows Version 4.0 SEQ ID NO 4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 4, Application US/10639835 Publication No. US20040111766A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TITLE OF INVENTION: Expression of Human Milk Proteins in TITLE OF INVENTION: Transgenic Plants FILE REFERENCE: 50665-8022.US01
CURRENT APPLICATION NUMBER: US/10/639,835
CURRENT FILING DATE: 2003-08-12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: Huang, Ning
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TYPE: PRT ORGANISM: Homo sapiens
                                                                                                                                   SOFTWARE: Patentin Release #1.0, CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/10/023,096
FILING DATE:
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US/00/724 686
        FILING DATE: 05-MAI-1....
ATTORNEY/AGENT INFORMATION:
Dlaver, William E.
                                                                                                                                                                                                                                                         CORRESPONDENCE ADDRESS:
ADDRESSEE: Jacobson, Price,
STREET: 400 Seventh St. N.W.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LENGTH: 690
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APPLICANT: Gollnick, Paul D.
APPLICANT: Doyle, Darrell J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT:
                                                                            APPLICATION NUMBER: US/08 FILING DATE: 30-SEPT-1996 APPLICATION NUMBER: US 08
                                                                                                                                                                                                                                                                                                                                                                                          CITY: Washington D.C.
REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                       COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      339 ÁRRÁRVVWCÁVG 350
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Hagie, Frank
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Cloning, Expression, and Uses of Human Lactoferrin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         93.3%;
91.7%;
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                                                                                 US 08/238,445
                                                                                                                      US/08/724,586
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31,409
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Pred. No. 0.35;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mismatches
                                                                                                                                                                                                                                              Version #1.25
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Gaps

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; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
US-10-023-096-2
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US-10-170-221-2
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INFORMATION FOR SEQ ID NO: 2
SEQUENCE CHARACTERISTICS:
LENGTH: 694 amino acids
                 TELEFAX: 415-543-5043 INFORMATION FOR SEQ ID NO: 2: SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TELECOMMUNICATION INFORMATION:
                                                                                                                                                                           APPLICATION NUMBER: US/08/476,798
FILING DATE: 07-JUN-1995
APPLICATION NUMBER: US 08/077,788
FILING DATE: 15-JUN-1993
APPLICATION NUMBER: US 07/895,956
FILING DATE: 15-JUN-1992
APPLICATION NUMBER: US 07/619,131
FILING DATE: 27-NOV-1990
APPLICATION NUMBER: US 07/444,745
FILING DATE: 01-DEC-1989
ATTORNEY/AGENT INFORMATION:
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                                                                                                                                                                                                                                                                                                                                                                                                                     COMPUTER RÉADABLE FORM:

MEDIUM TYPE: Floppy disk

COMPUTER: IBM PC compatible

OPERATING SYSTEM: PC-DOS/MS-DOS

SOFTWARE: Patentin Release #1.0, Version #1.25

CURRENT APPLICATION DATA:

APPLICATION UMBER: US/10/170,221

FILING DATE: 11-Jun-2002

CLASSIFICATION: CUnknown>
                                                                           NAME: Liebescheutz, Joe O.
REGISTRATION NUMBER: 37,505
REFERENCE/DOCKET NUMBER: 16994-003125
TELECOMMUNICATION INFORMATION:
TELEPHONE: 415-543-9600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CORRESPONDENCE ADDRESS:
ADDRESSEE: Townsend and Townsend and Crew
STREET: One Market Plaza, Steuart Tower, Suite 2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pieper, Frank
Rimpenfort, Paul J.A.
Krimpenfort, Paul J.A.
TITLE OF INVENTION: Production of Recombinant Polypeptides
by Bovine Species and Transgenic Methods
                                                                                                                                                                                                                                                                                                                                                                                                      PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      343
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STATE: California
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CITY: San Francisco
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Lee, Sang He
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Heyneker, Herbert L.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       93.3%;
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Pred. No. 0.
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; SEQ ID NO 9
; LENGTH: 711
; TYPE: PRT
; ORGANISM: Homo sapiens
US-10-169-297-9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT: TOMOCHAIL
APPLICANT: TOMOCHAI
APPLICANT: MUTALA, MASSAHI
APPLICANT: Enjoji, Takashi
INTLE OF INVENTION: Preventives and Remedies for
TITLE OF INVENTION: Hepatitis
FILTE REFERENCE: 3435.1000-000
FULRENT APPLICATION UNMBER: US/10/169,297
CURRENT FILING DATE: 2002-10-31
PRIOR APPLICATION NUMBER: BCT/JP00/09393
PRIOR TILING DATE: 2000-12-28
PRIOR APPLICATION NUMBER: UF 11/374087
PRIOR APPLICATION NUMBER: JP 11/374087
PRIOR FILING DATE: 1999-12-28
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US-10-170-221-4
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Publication No. US20030171276A1
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local Similarity
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Local Similarity 91.7%;
ZIP: 94105
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                   Krimpenfort, Paul J.A.
TITLE OF INVENTION: Production of Recombinant Polypeptides
by Bovine Species and Transgenic Methods
                                                                                                                                                              CORRESPONDENCE ADDRESS:
                                                                                                                                                                                    NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: Deboer, Herman A.
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                                                              COUNTRY: USA
                                                                                 STATE: California
                                                                                                                        ADDRESSEE: Townsend and Townsend and Crew STREET: One Market Plaza, Steuart Tower,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TYPE: amino acid
                                                                                                    CITY: San Francisco
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
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Lee, Sang He
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Heyneker, Herbert L.
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                                                                                                                                                                                                                                                                   Frank
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Pred. No. 0.36
0; Mismatches
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Gaps

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MOLECULE TYPE: protein

SEQUENCE DESCRIPTION: SEQ ID NO: 4:
US-10-170-221-4
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US-10-341-434-202
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                                                                                                                                                                      ; ORGANISM: Homo sapiens
US-10-341-434-202
                                                                                                                                                                                                                                 NUMBER OF SEQ ID NOS: 238
SOFTWARE: Patentin version 3.1
SEQ ID NO 202
LENGTH: 711
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                                                                                     Matches
                                                                                                                              Query Match
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Best Local
                                                                                                                                                                                                                                                                                                             APPLICANT: Origene Technologies
TITLE OF INVENTION: Differentially Regulated Prostate Cancer Genes
FILE REFERENCE: 9U 204 205 R1
CURRENT APPLICATION NUMBER: US/10/341,434
CURRENT FILING DATE: 2003-07-18
CURRENT FILING DATE: 2003-07-18
FRIOR APPLICATION NUMBER: US 60/348,164
PRIOR PILING DATE: 2002-01-15
PRIOR PILING DATE: 2002-01-15
PRIOR FILING DATE: 2002-01-15
PRIOR FILING DATE: 2002-01-15
PRIOR FILING DATE: 2002-01-15
NUMBER: OF CEC. IT. NICE: 203-
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                                                                                                         Local
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FILING DATE: 15-UTW-1992
APPLICATION NUMBER: US 07/619,131
FILING DATE: 27-NOV-1990
APPLICATION NUMBER: US 07/444,745
FILING DATE: 01-DEC-1989
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TELECOMMUNICATION INFORMATION: TELEPHONE: 415-543-9600
  360 ARRARVVWCAVG 371
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                                             1 ARRARVVWAAVG 12
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                                                                                                       h 93.3%;
Similarity 91.7%;
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Similarity 91.7%;
ll; Conservative
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NAME: Liebescheutz, Joe O.
REGISTRATION NUMBER: 37,505
REFERENCE/DOCKET NUMBER: 16994-003125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LENGTH: 711 amino acids TYPE: amino acid
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICATION NUMBER: US 08/077,788 FILING DATE: 15-JUN-1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICATION DATA:
APPLICATION NUMBER: US/08/476,798
FILING DATE: 07-JUN-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Application US/10341434
                                                                                     Conservative
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                                                                                                       Score 56; DB 15; Length 711; Pred. No. 0.36;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-10-341-434-218
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SEQ ID NO 218
LENGTH: 711
                                                                                   Matches
                                                                                                                                                                                                                                                    SOFTWARE: PatentIn Ver. 2.1
SEQ ID NO 69
                                                                                                      Query Match
Best Local Similarity
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                                                                                                                                                                                                                                                                                                           TITLE OF INVENTION: NOVEL BIOMARKERS OF TYROSINE KINASE INHIBITOR EXPOSURE FILE OF INVENTION: AND ACTIVITY IN MAMMALS
FILE REFERENCE: 038602/1592
CURRENT APPLICATION NUMBER: US/10/440,464
CURRENT FILING DATE: 2003-05-19
PRIOR APPLICATION NUMBER: 60/380,872
PRIOR FILING DATE: 2002-05-17
PRIOR APPLICATION NUMBER: 60/448,922
PRIOR APPLICATION NUMBER: 60/448,922
PRIOR APPLICATION NUMBER: 60/448,922
PRIOR PILING DATE: 2003-02-24
PRIOR FILING DATE: 2003-02-24
PRIOR FILING DATE: 2003-02-24
PRIOR FILING DATE: 2003-02-24
NUMBER OF SEC TIN NOS: 1985
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Best Local Similarity
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Publication No. US20030215835A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT: OriGene Technologies
TITLE OF INVENTION: Differentially Regulated Prostate Cancer Genes
FILE REFERENCE: 9U 204 205 R1
CURRENT APPLICATION NUMBER: US/10/341,434
CURRENT FILLING DATE: 2003-07-19
PRIOR APPLICATION NUMBER: US 60/348,164
PRIOR FILLING DATE: 2002-01-15
PRIOR PILLING DATE: 2002-01-15
PRIOR PILLING DATE: 2002-01-15
PRIOR FILLING DATE: 2002-01-15
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                                                                                                                                                                                                                                                                                                    NUMBER OF SEQ ID NOS: 185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: DEPRIMO, SAMUEL APPLICANT: O'FARRELL, ANN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT:
                                                                                                                                                                                       TYPE: PRT
ORGANISM: Homo sapiens
                                                                                                                                                                                                                                    ENGTH:
360 ARRARVVWCAVG 371
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               360 ARRARVVWCAVG 371
                                        1 ARRARVVWAAVG 12
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CHERRINGTON, JUL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SCHILLING,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SMOLICH, BEVERLY MANNING, WILLIAM WALTER, SARAH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               O'FARRELL, ANNE-MARIE
MORIMOTO, ALYSSA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Application US/10440464
6. US20040018528A1
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                                                                                   Conservative
                                                                                                      93.3%;
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91.7%;
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                                                                                   0; Mismatches
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Pred. No. 0.36;
0; Mismatches
                                                                                                        Pred. No. 0.36;
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                                                                                                                            DB 15;
                                                                                                                          Length 711;
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US-10-408-765A-2000

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APPLICANT: Gibson, Bradford W.

APPLICANT: Taylor, Steven W.

APPLICANT: Gibson, Bradford W.

APPLICANT: Gibson, Steven W.

APPLICANT: Glenn, Gary M.

APPLICANT: Warnock, Dale E.

TITLE OF INVENTION: TARGETS FOR THERAPEUTIC INTERVENTION

TITLE OF INVENTION: IDENTIFIED IN THE MITOCHONDRIAL PROTEOME

FILE REFERENCE: 660088.465

CURRENT APPLICATION NUMBER US/10/408,765A

CURRENT FILING DATE: 2003-04-04

NUMBER OF SEQ ID NOS: 3077

SOFTWARE: FRANCE Q for Windows Version 4.0

; SEQ ID NO 2000

LENGTH: 711

TYDER. DET
                                                                                                                                                                                                                                                                                                                                                              Sequence 35, Application US/10169297
Publication No. US20030171276A1
GENERAL INFORMATION:
APPLICANT: Tohdoh, Nacki
APPLICANT: Tohdoh, Nacki
APPLICANT: Murata, Masshi
APPLICANT: Murata, Masshi
ITITLE OF INVENTION: Preventives and Remedies for Chronic
ITITLE OF INVENTION: Hepatitis
FILE REFERENCE: 3435.1000-000
CURRENT APPLICATION NUMBER: US/10/169,297
CURRENT FILING DATE: 2002-10-31
PRIOR APPLICATION NUMBER: PCT/JP00/09393
PRIOR APPLICATION NUMBER: PCT/JP00/09393
PRIOR APPLICATION NUMBER: JP1/374087
PRIOR APPLICATION NUMBER: JP 11/374087
PRIOR APPLICATION NUMBER: JP 11/374087
PRIOR FILING DATE: 1999-12-28
NUMBER OF SEQ ID NOS: 50
SOFTMARE: FastSEQ for Windows Version 4.0
SEQ ID NO 35
LENGTH: 234
TYPE: PRI
CENTRALE: PastSEQ for Windows Version 4.0
                                                           RESULT 14
US-10-169-297-8
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US-10-169-297-35
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US-10-169-297-35
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Sequence 8, Application US/10169297 Publication No. US20030171276A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                           Query Match
Best Local (
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APPLICANT: Fahy, Eoin D.
APPLICANT: Zhang, Bing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  360 ARRARVVWCAVG 371
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11; Conserv
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9; Conserv
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75.0%;
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Pred. No. 9
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Pred. No. 0.
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Search completed: September Job time: 29.36 secs

2004, 00:49:24

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APPLICANT: MUTATA, MASASAI
APPLICANT: Enjoji, Takashi
TITLE OF INVENTION: preventives and Remedies for
TITLE OF INVENTION: Departitis
FILE REFERENCE: 3435.1000-000
CURRENT APPLICATION NUMBER: U05/10/169,297
CURRENT FILING DATE: 2002-10-31
PRIOR APPLICATION NUMBER: PCT/JP00/09393
PRIOR FILING DATE: 2000-11-28
PRIOR APPLICATION NUMBER: JP 11/374087
PRIOR APPLICATION NUMBER: JP 11/374087
PRIOR FILING DATE: 1999-12-28
NUMBER OF SEQ ID NOS: 50
SOFTWARE: FastSEQ for Windows Version 4.0
SEQ ID NO
SEQ ID NO
SEQ ID NO
LENGTH: 708
TYPE: PRT
ORGANISM: Bos taurus
US-10-169-297-8
뭉
                                                                                                                                                          ; ORGANISM: Streptomyces avermitilis US-10-156-761-10952
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US-10-156-761-10952
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APPLICANT: SAKAKI, YOSHIYUKI
APPLICANT: HATTORI, MASAHIRA
TITLE OF INVENTION: NOVEL POLYNUCLECTIDES
FILE REFERENCE: 249-262
CURRENT FILLING DATE: 2002-05-29
PRIOR APPLICATION NUMBER: US/10/156,761
CURRENT FILLING DATE: 2001-05-30
PRIOR FILLING DATE: 2001-05-30
PRIOR APPLICATION NUMBER: UF 2001-272697
PRIOR FILING DATE: 2001-08-02
NUMBER OF SEQ ID NOS: 15109
                                                                                                                                                                                                 SEQ ID NO 10952
LENGTH: 254
TYPE: PRT
                                                                                                Query Match
Best Local :
                                                                               Matches
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 10952, Application US/10156761 Publication No. US20030119018A1
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APPLICANT: IKEDA, HARUO
APPLICANT: IKHLKAWA, JUN
APPLICANT: HORIKAWA, HIROSHI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: Tohdoh, Naoki
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8; Conserv
                                  ARRARVVWAA 10
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42
                                                                                                68.3%;
80.0%;
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Pred. No. 46;
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5 75.0 708 1 TFBOL 4 73.3 708 2 JC2323 p-hydroxybe 5 71.7 491 2 T46684 p-hydroxybe 6 71.7 707 1 A28438 p-hydroxybe 6 6.7 349 2 JEC375 probable on 6 6.7 449 2 JEC375 probable on 6 6.7 449 2 JEC375 probable on 6 6.7 449 2 JEC376 probable on 6 6.0 285 1 IDECRP replication 6 6.0 285 2 JC4780 probable on 6 6.0 285 2 JC4780 probable on 6 6.0 285 2 JC4780 probable on 6 6.3 3 JC6 2 F72563 probable on 6 6.3 3 986 2 F72567 prothetica 6 6 6 6 7 338 2 F72507 prothetica 7 6 1.7 379 2 A83466 prothetica 7 6 1.7 379 2 A83525 prothetica 7 6 1.7 469 2 A83520 prothetica 7 6 1.7 469 2 A83617 probable on 7 6 1.7 469 2 A83617 probable on 7 6 1.7 484 2 B97482 probable on 6 6 6 6 0 158 2 F72607 prothetica 6 6 0 158 2 F72607 prothetica 7 6 1 7 6 1 7 7 2 AB160 prothetica 7 6 1 7 7 2 AB160 prothetica 7 6 1 7 7 2 AB160 prothe	Query Query Score Match Length DB ID D 56 93.3 711 1 TFHUL	Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution. SUMMARIES	Database : PIR 78:* 1: pir1:* 2: pir2:* 3: pir3:* 4: pir4:*	Post-processing: Minimum Match 10% Maximum Match 100% Listing first 45 summaries	00	Searched: 283366 segs, 96191526 residues Total number of hits satisfying chosen parameters: 283366	Scoring table: BLOSUM62 Gapop 10.0 , Gapext 0.5	Title: US-09-508-095-22 Perfect score: 60 Sequence: 1 ARRARVVWAAVG 12	Run on: September 1, 2004, 00:03:45; Search time 6.96 Seconds (without alignments) 165.847 Million cell updates/sec	OM protein - protein search, using sw model	Copyright (c) 1993 - 2004 Compugen Ltd.
A;Title: Differential molecular mea A;Reference number: A45401; MUID:9 A;Recession: A45401 A;Rocession: A45401 A;Molecule type: DNA A;Residues: 1-15 <ten> A;Residues: 1-15 <ten> A;Residues: 1-15 <ten> A;Residues: GB:S2659; NID A;Experimental source: placenta A;Note: sequence extracted from NCI R;Powell, M,J.; Ogden, J.E. Nucleic Acids Res. 18, 4013, 1990 A;Title: Nucleotide sequence of hun A;Reference number: \$10324; MUID:9 A;Accession: \$10324 A;Molecule type: mRNA A;Residues: 3-711 < 70% A;Cross-references: EMBL:X52941; N R;Stowell, K.M.; Rado, T.A.; Funk, Biochem. J. 276, 349-55, 1991 A;Title: Expression of cloned human A;Reference number: \$15853; MUID:9 A;Accession: \$15853 A;Astatus: nucleic acid sequence no A;Molecule type: mRNA A;Residues: 20-31 < 371> A;Accession: S20841 A;Molecule type: protein A;Residues: 20-28,'X',30-31 < 372></ten></ten></ten>	A;Accession: S11228 A;Molecule type: mRNA A;Residues: 1-148,'T', 150-422,'C', A;Cross references: EMBL:X53961, N. A;Teng, C.T.; Liu, Y.; Yang, N.; W.	A;Resitues: 1-711 <cbo's 18,="" 1990="" 5288,="" a;cross-references:="" a;reference="" a;title:="" acids="" complete="" deboe:="" embl:u07643;="" m.w.;="" muid:9<="" n.="" nucleic="" nucleotide="" number:="" r;rey,="" res.="" s.l.;="" s11228;="" seque:="" td="" woloshuk,=""><td>ted to trence nu ssion: Gus. prel</td><td>N;Alternate names: Lactoferrn C;Species: Homo sapiens (man) C;Date: 31-Mar-1992 #sequence_revi C;Accession: G01394; S11228; Ā4540</td><td>RESULT 1 TFHUL lactotransferrin precursor [valida</td><td></td><td>5 35 58.3 133 2</td><td>36 60.0 827 2 2 36 60.0 1279 2 3 35 58.3 57 2 4 35 58.3 84 2</td><td>37 36 60.0 771 1 W1 38 36 60.0 771 2 T1 38 36 60.0 771 2 T1 40 36 60.0 771 2 H1</td><td>4 36 60.0 512 2 5 36 60.0 513 1 6 36 60.0 771 1</td><td>36 60.0 497 2 36 60.0 501 1 36 60.0 507 2</td></cbo's>	ted to trence nu ssion: Gus. prel	N;Alternate names: Lactoferrn C;Species: Homo sapiens (man) C;Date: 31-Mar-1992 #sequence_revi C;Accession: G01394; S11228; Ā4540	RESULT 1 TFHUL lactotransferrin precursor [valida		5 35 58.3 133 2	36 60.0 827 2 2 36 60.0 1279 2 3 35 58.3 57 2 4 35 58.3 84 2	37 36 60.0 771 1 W1 38 36 60.0 771 2 T1 38 36 60.0 771 2 T1 40 36 60.0 771 2 H1	4 36 60.0 512 2 5 36 60.0 513 1 6 36 60.0 771 1	36 60.0 497 2 36 60.0 501 1 36 60.0 507 2

ABC-type transport sensory protein ki	cytosine deaminase		(D)	amino aci		prote		orote	ranos	nypothetical prote			probable cytochrom				rin p	lactoferrin precur	5 1	Description			tied by chance to have a of the result being printed,							200000						.847 Million cell updates/sec	Search time 6.96 Seconds		-	ompugen Ltd.	, p. 6
	Accession	,	A;Accession: Sibabb A;Status: nucleic acid sequence not shown; not compared	A;Reference number: S15853; MUID:91264786; PMID:2049066	Biochem. J. 276, 349-355, 1991	R;Stowell, K.M.; Rado, T.A.; Funk, W.D.; Tweedie, J.W.	A; Residues: 3-711 < POW>	A;Accession: S10324 A;Molecule type: mRNA	A; Reference number: S10324; MUID: 90326549; PMID: 237473.	Nucleic Acids Res. 18, 4013, 1990 A;Title: Nucleotide sequence of human lactoferrin cDNA	R;Powell, M.J.; Ogden, J.E.	A; Note: sequence extracted from NCBI backbone (NCBIP:122202)	A;Cross-references: GB:S52659; NID:G2633II; FIDN:AAB248//.I; A:Experimental source: placenta	A; Residues: 1-15 <ten></ten>	A; Molecule type: DNA	A;Reference number: A45401; MOID:931255/1; FMID:148018	A; Title: Differential molecular mechanism of the estrop	Mol. Endocrinol. 6, 1969-1981, 1992	A;Cross-references: EMBL:X53961; NID:g34415; PIDN:CAA3	A; Molecule type: mRNA A; Residues: 1-148, 'T', 150-422, 'C', 424-711 < REY>	A;Reference number: S11228; MUID:90384839; PMID:240245; A;Accession: S11228	A; Title: Complete nucleotide sequence of human mammary	A;CTOSS-TEIETENCES: EMBL:UU7643; NID:9467236; FIDN:AAB6U324.1; F R;Rey, M.W.; Woloshuk, S.L.; deBoer, H.A.; Pieper, F.R. Nucleic Acids Res. 18. 5288. 1990	A; Residues: 1-711 <cho></cho>	A;Status: preliminary; translated from GB/EMBL/DDBJ	A;Reference number: G06820 A;Accession: G01394	submitted to the EMBL Data Library, March 1994	C, Date: 31-Mart 1992 #sequence revision 21-Nov-1997 #text_cha C, Date: 31-Mart 1992 #sequence revision 21-Nov-1997 #text_cha C, Accession: G01394; S11228; A45401; S10324; S15853; S20841;	lactotransferrin precursor [validated] - human N;Alternate names: lactoferrin O;Crocioc: Uno casions (man)		ALIGNMENTS	35 58.3 84 35 58.3 133	35 58.3 57 2	36 60.0 1279 2	36 60.0 771 2	36 60.0 771 2	36 60.0 771 1	36 60.0 513 1 36 60.0 771 1	36 60.0 512 2	36 60.0 501 1 Pin	30 36 60.0 447 2 F97460 31 36 60.0 497 2 T48676
		,	with conceptual translation	(chamater kidney cells	++0.+) 5+2.5044+4	-					2202)	//.1; FID:9263312				en action that regulates lactofer	•	914.1; PID:g34416		•	gland lactoferrin.	0324.1; PID:946/23/		-			t_change 08-Dec-2000 0841; S07160; A61169; A31000; S74				nypothetical prote	ribonucleoside-dip	type IIS restricti	L4L protein - vari	ribonucleoside-dip	ribonucleoside-dip	ribonucleoside-dip	high affinity prol	L1 protein - Europ L1 protein - human	hypothetical prote proline uptake pro

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A; Molecule type: protein
A; Residues: 20-140,142-169,171-203,'L',205,'K',207-208,'K',210-385,'Q',387-391,'W',393-A; Residues: 20-140,142-169,171-203,'L',205,'K',207-208,'K',210-385,'Q',387-391,'W',393-A; Residues: 20-140,142-16 a series
A; Houen, G.; Hoegdall, E.V.; Barkholt, V.; Norskov, L.
Eur. J. Biochem. 241, 303-308, 1996
A; Title: Lactoferrin: similarity to diamine oxidase and purification by aminohexyl aff: A; Reference number: S74119; MUID:97054624; PMID:8898921
A; Reference number: S74119; MUID:97054624; PMID:8898921
A; Residues: 'G',23-24,'R',26-27,'XX',30-32 < HOU>A; Residues: 'G',23-24,'R',25-24,'R',25-24,'R',25-24,'R',25-24,'R',25-24,'R',25-24,'R',25-24,'R',25-24,'R',25-24,'R',25-24,'R',25-24,'R',25-24,'R',25-24,'R',25-24,'R',25-24,'R',25-24,'R',25-24,'R',25-24,'R',25-24,'R',25-24,'R',25-24,'R',25-24,'R',25-24,'R',25-24,'R',25-24,'R',25-24,'R',25-24,'R',25-24,'R',25-24,
                                                                                                                                                                                                                      lactoferrin precursor - pig
()Species: Sus scrofa domestica (domestic pig)
C)Bate: 17-7eb-1994 #sequence_revision 17-Feb-1994 #text_change 04-Mar-2000
C;Accession: A45543; S24173
R;Alexander, L.J.; Levine, W.B.; Teng, C.T.; Beattie, C.W.
Anim. Genet. 23, 251-256, 1992
A;Title: Cloning and sequencing of the porcine lactoferrin cDNA.
A;Reference number: A45543; MUID:92367939; PMID:1503259
A;Accession: A45543; MUID:92367939; PMID:1503259
A;Molecule type: mRNA
A;Residues: 1-703 <ALE>
A;Experimental source: mammary gland
A;Experimental source extracted from NCBI backbone (NCBI backbone)
A;Experimental source extracted from NCBI backbone (NCBI backbone)
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A45543
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A;Title: Human lactotransferrin: amino acid sequence and structural comparisons with A;Reference number: A31000; MUID:85076667; PMID:6510420
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F;21-356/Domain: transferrin repeat homology <TRH1>
F;36-699/Domain: transferrin repeat homology <TRH2>
F;36-699/Domain: transferrin repeat homology <TRH2>
F;29-65,39-56,135-218,177-193,190-201,251-265,503-697,595-609/Disulfide bonds: #status experimental
F;157,498/Binding site: carbohydrate (Asn) (covalent) #status experimental
F;368-400,378-391,425-706,447-669,479-554,513-527,524-537,647-652/Disulfide bonds: #status
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A;Residues: 436-487,'A',489-711 <RAD>
A;Residues: 436-487,'A',489-711 <RAD>
A;Residues: 436-487,'A',489-711 <RAD>
A;Residues: 436-487,'A',489-711 <RAD>
A;Residues: 1,368-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-1,488-
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Blood 70, 989-993, 1987
A;Tktle: Isolation of lactoferrin cDNA from a human myeloid library and expression A;Reference number: S07160; MUID:88001031; PMID:3477300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Accession: A31000
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Superfamily: transferrin; transferrin repeat homology; Keywords: duplication; glycoprotein; iron binding; milk; 1-19/Domain: signal sequence #status predicted <SIG>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Cross-references: GDB:119368; OMIM:150210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ;Molecule type: mRNA;Residues: 3-701,'SWKPVN' <PAN>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches
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91.7%;
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Pred. No. 0.031;
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                                     (NCBIN:111151, NCBIP:111153)
ee, T.; Headon, D.R.; Conneely,
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C;Species: Box primigenius taurus (cattle)
C;Date: 31-Mar-1992 #sequence revision 21-Nov-1997 #text change 11-May-2000
C;Accession: I45919; S14674; S14110; S18517; JT0595; S13097; S18518; S13881;
R;Tsang, T.C.; Burns, D.K.; Wang, F.; Pan, Y.
PASES J. 6, 233, 1991
A;Title: Cloning of a 80-kb advanced glycosylation end product (AGE) binding A;Reference number: I45919
A;Accession: I45919
A; Molecule type: mRNA
A; Residues: 1-65, 'PG',
A; Cross-references: GH
                                                                                                      A;Molecule type: protein
A;Molecule type: protein
A;Residues: 20-55;82-114;148-163,'Pp',166-178,'V','P';183-190;205-212;230-239;304-339;59
R;Goodman, R.E., Schanbacher, F.L.
Biochem. Biophys. Res. Commun. 180, 75-84, 1991
A;Title: Bovine lactoferrin mRNA: sequence, analysis, and expression in the mammary glan
A;Reference number: JT0595; MUID:92028986; PMID:1718281
A;Accession: JT0595
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A;Molecule type: mRNA, A;Molecule type: mRNA, A;Molecule type: mRNA, A;Residues: 1-144, 'V',146-163,'PP',166-339,'A',341-438,'Y',440-513,'R',515-708 A;Residues: EMBL:X57084; NID:g505; PIIN:CAAA0366.1; PID:g506 A;Cross-references: EMBL:X57084; NID:g505; PIIN:CAAA0366.1; PID:g506 R;Pierce, A.; Colavizza, D.; Benaissa, M.; Maes, P.; Tartar, A.; Montreuil, J.; Eur. J. Biochem. 196, 177-184, 1991 Eur. J. Biochem. 196, 177-184, 1991 A;Title: Molecular cloning and sequence analysis of bovine lactotransferrin. A;Title: Molecular cloning and sequence analysis of bovine lactotransferrin. A;Reference number: S14110; MUID:91160550; PMID:2001696
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F;354-691/Domain: transferrin repeat homology <TRH2>
F;254-691/Domain: transferrin repeat homology <TRH2>
F;28-62,38-53,119-698,439-661,471-546,49
F;77,107,206,267/Binding site: iron (Asp, Tyr, Tyr, His) #status predicted
F;135/Binding site: carbonate (Arg) #status predicted
F;135/Binding site: iron (Asp, Tyr, His) #status predicted
F;409,447,540,609/Binding site: iron (Arg) #status predicted
F;490/Binding site: carbonate (Arg) #status predicted
F;490/Binding site: carbohydrate (Asn) (covalent) #status predicted
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A;Title: Nucleotide and primary amino acid
A;Reference number: S24173; MUID:92379101;
A;Accession: S24173
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   submitted to the EMBL Data Library, November 1990 A;Reference number: S14674 A;Accession: S14674
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A; Residues: 1-708 < TSA>
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A; Residues: 1-11, 'W',
                                                                                                                                                                                                                                                                                                                                                           A;Cross-references: EMBL:X57084
A;Accession: S18517
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A; Residues: 3-144,'V',146-339,'A',341-438,'Y',440-513,'R',515-708
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9; Conserv
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G',68-296,'S',298-339,'A',341-708
GB:M63502
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A;Molecule type: protein

A;Molecule type: protein

A;Residues: 36-60 <BEL's

R;Shimazaki, K.; Tanaka, T.; Kon, H.; Oota, K.; Kawaguchi, A.;

J. Dalry Sci. 76, 946-955, 1993

A;Title: Separation and characterization of the C-terminal hal

A;Reference number: A56659; MUID:93253156; PMID:8486845

A;Recession: A56659

A;Molecule type: protein

A;Residues: 20-25;302-308;359-366,'X',368-376,'X',378 <SHI>
C;Superfamily: transferrin; transferrin repeat homology

C;Keywords: duplication; glycoprotein; iron; iron binding; met

F;1-19/Domain: signal sequence #status predicted <SIG-

F;20-708/Product: lactotransferrin #status experimental <MAT>

F;36-60/Region: antimicrobial

F;36-60/Region: antimicrobial
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A; Residues: 20-25;302-308;359-366,'X',368-376,'X',378 <SHI>
C; Superfamily: transferrin; transferrin repeat homology
C; Superfamily: transferrin; status predicted <SIGs -
F;1-19/Domain: signal sequence #status predicted <SIGs -
F;20-708/Product: lactotransferrin #status experimental <MATS -
F;20-708/Product: lactotransferrin repeat homology <TRH1>
F;30-55/Domain: transferrin repeat homology <TRH1>
F;35-69/Region: antimicrobial
F;35-69/Region: antimicrobial
F;35-69/Superfamin: transferrin repeat homology <TRH2>
F;38-64,134-217,176-192,179-200,189-202,250-264,367-399,377-390,424-703,444-666,476-551,F;38-55/Disulfide bonds: #status predicted
F;79,111,211,272/Binding site: iron (Asp, Tyr, Tyr, His) #status experimental
F;414,452,545,614/Binding site: iron (Asp, Tyr, Tyr, His) #status experimental
F;414,452,545,614/Binding site: iron (Asp, Tyr, Tyr, His) #status experimental
F;482/Binding site: carbonate (Arg) #status experimental
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A;Accession: PL0148
A;Molecule type: protein
A;Rolecule type: protein
A;Residues: 20-27', X', 29-37', X', 39-54', X', 56-59 <REJ>
A;Residues: 20-27', X', 29-37', X', 39-54', X', Wakabayashi, H.; Kawase,
R;Bellamy, W; Takase, M.; Yamauchi, K.; Wakabayashi, H.; Kawase,
Biochim. Biophys. Acta 1121, 130-136; 1992
A;Title: Identification of the bacterioidal domain of lactoferrin.
A;Reference number: S21756; MUID:92287941; PMID:1599934
A;Accession: S21756
   C;Species: Capra aegagrus hircus C;Date: 20-Feb-1995 #sequence_rev C;Accession: JC2323 R;Le Provost, F; Nocart, M.; Gue Biochem. Biophys. Res. Commun. 20 A;Title: Characterization of the
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A;Molecule type: mRNA
A;Residues: 28-38,'P',40-86,'C',88-708 <ME3>
A;Residues: 28-38,'P',44-861
A;Cross-references: EMBL:X54801
R;Rejman, U.J.; Hegarty, H.M.; Hurley, W.L.
Comp. Biochem. Physiol. B 93, 929-934, 1989
A;Title: Purification and characterization of bovine lactoferrin
A;Reference number: PL0148; MUID:90031466; PMID:2805645
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A;MoLecule type: protein
A;Residues: 20-47;59-66;132-139;256-277;278,305-332;343-351;361-363;586,587-589;598-619
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A;Cross-refe
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Best Local S
Matches 9
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vost, F.; Nocart, M.; Guerin, G.; Martin, P.
Biophys. Res. Commun. 203, 1324-1332, 1994
Characterization of the goat lactoferrin cDNA:
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#sequence_revision 20-Feb-1995 #text_change
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A;Molecule type: mRNA
A;Residues: 3-707 <PEN>
A;Cross-references: EMBL:J03298
A;Cross-references: EMBL:J03298
R;Liu, Y.; Teng, C.T.
J. Biol. Chem. 266, 21880-21885, 1991
A;Title: Characterization of estrogen-responsive mouse:
A;Reference number: A41205; MUID:92042099; PMID:1939212
A;Accession: A41205
A;Molecule type: DNA
                                                                                                                                                                  C;Species: Mus musculus (house mouse)
C;Date: 10-Sep-1999 #sequence revision 10-Sep-1999 #text_C
C;Accession: A28438; A41205
R;Pentecost, B.T; Teng, C.T.
J. Biol. Chem. 262, 10134-10139, 1987
A;Title: Lactotransferrin is the major estrogen inducible A;Reference number: A92596; MUID:87280033; PMID:3611056
A;Accession: A28438
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                                                                                                                                                                                                                                                                                                                      lactoferrin precursor - mouse N;Alternate names: lactotransferrin
                                                                                                                                                                                                                                                                                                                                                              A28438
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A; Residues: 1-708 < LEP>
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family: aldehyde
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carbonic anhydrase-related protein - human C;Species: Homo sapiens (man)
C;Species: Homo sapiens (man)
C;Date: 23-Jul-1999 #sequence_revision 23-Jul-1999 #text_change 21-Jul-2000 C;Date: 23-Jul-1999 #sequence_revision 25-Jul-1999 #text_change 21-Jul-2000 C;Accession: JE0375
R;Bellingham, J; Gregory-Evans, K; Y.Gregory-Evans, C.
Biochem. Biophys. Res. Commun. 253, 364-367, 1998
A;Title: Sequence and tissue expression of a novel human carbonic anhydrase.
A;Heference number: JE0375; MUID:99097242; PMID:9878543
A;Accession: JE0375
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A;Cross-references: GB:M74778
A;Cross-references: GB:M74778
C;Superfamily: transferrin; transferrin repeat homology
C;Keywords: duplication; glycoprotein
F;1-19/Domain: signal sequence #status predicted <SIG>F;20-707/Product: lactotransferrin #status predicted <MAT>F;358-655/Domain: transferrin repeat homology <TRH2>
F;494/Binding site: carbohydrate (Asn) (covalent) #status |
                                                                                                                                                                                                                                                                                                                                                     Rajandream, M.A.; Rogers, J.; Rutter, S.; Seeger, K.; Skelton, S.; Squares, S. Mature 393, 537-544, 1998
A;Authors: Sqares, R.; Sulston, J.E.; Taylor, K.; Whitehead, S.; Barrell, B.G. A;Title: Deciphering the biology of Mycobacterium tuberculosis from the complete A;Reference number: A70500; MUID:98295987; PMID:9634230
A;Accession: H70526
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A; Residues: 1-328 < BE
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                                                 F;259-405/Domain: Cy
F;383/Binding site:
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A;Cross-references: GB:Z96800; GB:AL123456; NID:g3261800; PIDN:CAB09576.1; PID:g2193948
A;Experimental source: strain H37Rv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           probable cytochrome P450 Rv0327c - Mycobacterium tuberculosis (strain H37RV) N;Contains: oxidoreductase (BC 1.-.-.)
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                                                 Superfamily: Bacillus cytochrome P450 CYP106; cytochrome P450 homology; (Reywords: chromoprotein; heme; iron; metalloprotein; oxidoreductase; (Reywords: chromoprotein; heme; iron; metalloprotein; oxidoreductase; 259-405/Domain: cytochrome P450 homology <P45>
;383/Binding site: heme iron (Cys) (axial ligand) #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Species: Mycobacterium tuberculosis
;Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 23-Dec-2002
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     Score 40;
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A,Experimental source: planid NR1
R,Joong, X.; Womble, D.D.; Rownd, R.H.
J. Bacteriol. 169, 5353-5363, 1987
A,Title: Transcriptional pausing in a region important :
A,Reference number: A28378; MUID:88058738; PMID:2445727
A,Recession: C28378
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A;Residues: 270-285 <MAS>
A;Residues: 270-285 <MAS>
A;Cross references: EMB::X12587; NID:g41107; PIDN:CAA31100.1; PID:g41108
A;Experimental source: plamid R1
R;Jiang, T.; Min, Y.N.; Liu, W.; Womble, D.D.; Rownd, R.H.
J. Bacteriol. 175, 5350-5358, 1993
A;Title: Insertion and deletion mutations in the repA4 region of the IncE A;Reference number: A48662; MUID:93374828; PMID:8396115
A;Accession: A48662
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R;Rosen, J.; Ryder, T.; Ohtsubo, H.; Ohtsubo, E.
Nature 290, 794-797, 1981
A;Title: Role of RNA transcripts in replication incompatibility
A;Reference number: A93253; MUID:81173118; PMID:6163994
A;Accession: B03602
R;Womble, D.D.; Sampathkumar, P.; Easton, A.M.; Luckow, V.A.; Rownd, J. Mol. Biol. 181, 395-410, 1985
A;Title: Transcription of the replication control region of the IncFl A;Reference number: I41106; MUID:85160860; PMID:2580099
A;Accession: I41109
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Nucleic Acids Res. 16, 6493-6514, 1988

A;Title: RepA protein- and oriR-dependent initiation of R1

A;Reference number: S05591; MUID:88289416; PMID:3041379
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A;Accession: A03602
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A;Molecule type: DNA
A;Residues: 1-50 <DO2>
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A; Residues: 1-77 < ROS>
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A; Residues: 1-285 < RO1 >
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C;Species: E
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A; Status: preliminary; translated

from GB/EMBL/DDBJ

of the IncFII R-plasmid NR1

ij

NR1

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sucrose 1F-fructosyltransferase (EC 2.4.1.99) - wheat N,Alternate names: 1-SST; fructosyltransferase 2; Wft2 protein C;Species: Triticum aestivum (common wheat) C;Pate: 03.Feb-2003 #sequence_revision 03-Feb-2003 #text change C;Accession: JC7906
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       replication-associated protein Al - Escherichia coli (,Species: Escherichia coli (,Species: Escherichia coli C,Date: 07-Jun-1996 #sequence_revision 07-Jun-1996 #text_change: C,Date: 07-Jun-1996 #sequence_revision 07-Jun-1996 #text_change: C,Accession: 164780; 141110
R,Ohtsubo, H, Ryder, T.B., Maeda, Y., Armstrong, K.A., Ohtsubo, R,Ohtsubo, H, Ryder, T.B., 18404, Y., Armstrong, K.A., Ohtsubo, A,Title: DNA replication of the resistance plasmid R100 and its: A,Reference number: I51821, MUID:86319522; PMID:3019092
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A; Residues: 1-285 < RES>
A; Cross-references: EMBI
C; Genetics:
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A;Title: Transcription of the replication control region A;Reference number: I41106; MUID:85160860; PMID:2580099
A;Accession: I41110
                                                                                                     A; Molecule type: mRNA
A; Residues: 1-662 < KAW>
                                                                                                                                              Biosci. Biotechnol. Biochem. 66, 2297-2305, 2002
A;Title: Molecular characterization of sucrose:sucrose 1-fructosyltransferase A;Reference number: JC7905; MUID:22394650; PMID:12506964
A;Accession: JC7906
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A; Residues: 1-285 < R
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                                                             A;Cross-references: DDBJ:AB029888 C;Comment: This enzyme, which is
                                                                                                                                                                                                                                  R; Kawakami, A.; Yoshida,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Accession: I64780
                                      C;Comment: This enzyme, which is a vacuole-type fructosyltransferase and a fructan-biosy
fers a fructosyl moiety from one sucrose to another, resulting in the formation of trisa
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;Residues: 1-285 <RES>
;Cross-references: GB:M26840; NID:g151770; PIDN:AAA26067.1; PID:g151773
;Womble, D.D.; Sampathkumar, P.; Baston, A.M.; Luckow, V.A.; Rownd, R.H.
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Residues: 'M',166-285 <RE2>
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87.5%;
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a revision 03-Feb-2003 #text_change
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Pred. No. 15;
1; Mismatches
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Pred. No.
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ced. No. 15;
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R;DelVecchio, V.G.; Kapatral, V.; Redkar, R.J.; Patra, G.; Muj; Mazur, M.; Goltsman, E.; Selkov, E.; Elzer, P.H.; Hagius, S. Proc. Natl. Acad. Sci. U.S.A. 99, 443-448, 2002
A;Title: The genome sequence of the facultative intracellular A;Reference number: AD3252; PMID:11756688
A;Accession: AB3466
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A;Title: Complete genome sequence of an aerobic hyper-thermophilic Crenarchaeon, Aeropyz A;Reference number: A72450; MUID:99310339; PMID:10382966
A;Accession: F72563
                                                                                                                                                 A;Map position: I
C;Superfamily: inner membrane protein ugpA
                                                                                                                                                                                                                                               A;Molecule type: DNA
A;Residues: 1-307 <KUR>
A;Cross-references: GB;AE008917; PIDN:AAL52896.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                          maltose transport system permease protein malF [imported] - Brucella melite
C;Species: Brucella melitensis
C;Date: 01-Feb-2002 #sequence_revision 01-Feb-2002 #text_change 15-Feb-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-176 <KAW>
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C;Species: Aeropyrum pernix
C;Date: 20-Aug-1999 #sequence_revision 20-Aug-1999 #text_change 20-Jun-2000
C;Accession: F72563
                                                                                                                                                                                          A;Gene: BMEI1715
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT 13
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A;Experimental source: strain K1
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Best Local S
Matches 7
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                                                                         Similarity 6; Conserv
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lagius, S.; O'Callaghan,
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A; Description: catalyzes hydrolyzation of terminal non-reducing beta-D-fructofuranoside C; Superfamily: beta-fructofuranosidase C; Keywords: glycosidase; hydrolase
Search completed: September Job time: 8.96 secs
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Best Local Similarity
Thes 7; Conserve
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C;Species: Zea mays (maize)
C;Date: 05-Mar-1999 #sequence_revision 05-Mar-1999 #text_change 22-Jun-1999
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A;Description: Molecular characterization and differential expression of a invertase A;Reference number: Z14645
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 1-509 <XUJ>
A;Cross-references: EMBL;U31451; NID:g951165; PIDN:AAA74584.1; PID:g951166
A;Experimental source: strain merit; root tip
                                                                                                                                                                                                                                                                            A; Gene: CC2753
                                                                                                                                                                                                                                                                                                A;Cross-references: GB:AE005673; NID:gl3424347; PIDN:AAK24717.1; GSPDB:GN00148
                                                                                                                                                                                                                                                                                                                                           A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-986 <STO>
                                                                                                                                                                                                                                                                                                                                                                                                         R;Nierman, W.C.; Feldblyum, T.V.; Paulsen, I.T.; Nelson, K.E.; Eisen, J.; Heidelberg, J. B.; Laub, M.T.; DeBoy, R.T.; Dodson, R.J.; Durkin, A.S.; Gwinn, M.L.; Haft, D.H.; Kolon, J.; Ermolaeva, M.; White, O.; Salzberg, S.L.; Shapiro, L.; Venter, J.C.; Fraser, C.M. Proc. Natl. Acad. Sci. U.S.A. 98, 4136-4141, 2001
A;Title: Complete Genome Sequence of Caulobacter crescentus.
A;Reference number: A87249; MUID:21173698; PMID:11259647
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     hypothetical protein CC2753 [imported] - Caulobacter crescentus
C;species: Caulobacter crescentus
C;Date: 20-Apr-2001 #sequence_revision 20-Apr-2001 #text_change 20-Apr-2001
C;Accession: A87550
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human human human human human human human human human human		papi	Top'										

ALIGNMENTS

RESULT 1

077698; 15-JUL-1999 (Rel. 38, Created) 15-JUL-1999 (Rel. 38, Last sequence update) 10-OCT-2003 (Rel. 42, Last annotation update) Lactotransferrin precursor (Lactoferrin). BUBBU Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovoidea Bovidae; Bovinae; Bubalus. NCBI_TaxID=89462; Bubalus bubalis (Domestic water buffalo). BUBBU STANDARD; PRT; 708 Å Pecora; Bovoidea;

Singh T.P.;
"cDNA sequence of Buffalo lactoferrin.";
Submitted (JUN-1998) to the EMBL/GenBank/DDBJ SEQUENCE FROM N.A. Paramasiyam M., Thattaliyath B.D., Kumar A., Srinivasan Α.

X-RAY CRYSTALLOGRAPHY (2.5 ANGSTROMS).

MEDLINE=20003130; PubMed=10531476;
Karthikeyan S., Paramasivam M., Yadav S., Srinivasan A., Singh T.P.;
Karthikeyan S., Paramasivam M., Yadav S., Srinivasan A., Singh T.P.;
"Structure of buffalo lactoferrin at 2.5-A resolution using crystals
grown at 303 K shows different orientations of the N and C lobes.";
Acta Crystallogr. D 55:1805-1813(1999).
Acta Crystallogr. D 55:1805-1813(1999).
-I- FUNCTION: TRANSFERRINS ARE IRON BINDING TRANSPORT PROTEINS WHICH
CAN BIND TWO ATOMS OF FERRIC IRON IN ASSOCIATION WITH THE BINDING
OF AN ANION, USUALLY BICARBONATE.

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SUBCELLULAR LOCATION: Secreted.

DOMAIN: Composed of two homologous domains. SIMILARITY: Belongs to the transferrin family.

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Pfam, PF00405; transferrin; 2.
PRINTS; PR00422; TRANSFERRIN.
SMART; SM00094; TR PER; 2.

PROSITE; PS00205; TRANSFERRIN_1; 2.
PROSITE; PS00206; TRANSFERRIN_2; 2.
PROSITE; PS00207; TRANSFERRIN_3; 2.
PROSITE; PS00207; TRANSFERRIN_3; 2. Transport; Iron trans Signal; 3D-structure. SIGNAL 1 1 PDB; 1CE2; 19-MAR-99. PDB; 1BIY; 13-JAN-99. InterPro; IPR001156; Transferrin. EMBL; AJ005203; CAA06441.1;

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P02788; C007
Q9H1Z3;
21-JUL-1986
MEDINE-2338257; PubMed=12477932;
Strausberg R.L., Feingold E.A., Grouse L.H., Derge J.G.,
Klausner R.D., Collins F.S., Magner L., Shammen C.M., Schuler G.D.,
Altschul S. F., Zeeberg B., Buetow K.H., Schaefer C.F., Bhat N.K.,
Hopkins R.F., Jordan H., Moore T., Max S.I., Wang J., Hsieh F.,
Diatchenko L., Marusina K., Farmer A.A., Rubin G.M., Hong L.,
Stapleton M.J., Usdin T.B., Toshiyuki S., Carninci P., Prange C.,
Raha S.S., Loquellano N.A., Peters G.J., Abramson R.D., Mullahy S.J.,
Bosak S.A., McEwan P.J., McKernan K.J., Malek J.A., Gunaratne P.H.,
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HUMAN
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MEDLINE=90384839; PubMed=2402455;
MEDLINE=90384839; PubMed=2402455;
Rey M.W., Woloshuk S.L., de Boer H.A.,
"Complete nucleotide sequence of human
Nucleic Acids Res. 18:5288-5288(1990).
                                                                                                                                                               Cheng H., Chen X., Huan L.; "cDNA cloning and sequence analysis of human lactoferrin."; Submitted (DEC-2000) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                             TISSUE=Bone marrow;
Wei X., Han J., Rado T.A.;
"Human neutrophil lactoferrin
                                                                                                                                                                                                                                                                                                                           TISSUE=Mammary gland;
Liang Q., Jimenez-Flores R., Richardson T.;
"Molecular cloning and sequence analysis of h
Submitted (DEC-1991) to the EMBL/GenBank/DDBJ
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Mammalia; Eutheria;
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Lactoferroxin B;
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(Rel. 38, Last sequence update)
(Rel. 42, Last annotation update)
errin precursor (Lactoferrin) [Contains:
in B; Lactoferroxin C].
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"Structure of human d. resolution.";
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SEQUENCE OF 609-711.
MEDLINE-82262043; PubMed=7049727;
MEDLINE-1710 M.-H., Jolles J., Mazurier J.,
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                                                                                                                                                                                        McCombie W.R., Wilson R., Chen E., Gibbs R., Zuo L., Johnson D., Mann M., Parmell L., Dedhia N., Ansari A., Mardis E., Schutz K., Gnoj L., la Bastide M., Kaplan N., Greco T., Touchman J., Muzny D., Chen C.N., Evans C., Fitzgerald M., See L.H., Tang M., Porcel B.M., Dragan Y., Giacalone J., Pae A., Powell E., Solinsky K.A., Desilva U., Diaz-Perez S., Zhou X., Yu Y., Watanabe M., Doggett N., Garcia D., Sagripanti J.L.;
Submitted (MAR-1997) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                      SEQUENCE OF 436-711 FROM N.A. MEDILINE=88001.031; PubMed=3477300; Rado T.A., Wei X., Benz E.J. Jr.; "Isolation of lactoferrin cDNA freexpression of mRNA during normal
                          X-RAY CRYSTALLOGRAPHY (2.2 ANGSTROMS).
Haridas M., Anderson B.F., Baker E.N.;
"Structure of human diferric lactoferrin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDLINE=85076667; PubMed=6510420; Metz-Boutigue M.-H., Jolles J., Mazurier J., Legrand D., Spik G., Montreuil J., Jolles P.; "Human lactotransferrin: amino acid sequence comparisons with other transferrins.";
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alignment of
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MEDLINE=90326549; Pub
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Metz-Boutigue M.-H.,
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"Nucleotide sequence of human
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Mol.
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                                                                                                                                                             CRYSTALLOGRAPHY (2.8 ANGSTROMS),
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                                                                                   .F., Baker H.M., Norris G.E., Rice D.W., Baker E.N of human lactoferrin: crystallographic structure ment at 2.8-A resolution."; ol. 209:711-734(1989).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   state of the human lactotransferrin
the cyanogen bromide fragments and c
minal domains.";
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Res. 18:4013-4013(1990).
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                                                                                                                                                                                                                                                                                                                                                         Benz E.J. Jr.;

oferrin cDNA from a human myeloid library during normal and leukemic myelopoiesis.
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51:629-646(1995)
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A El Matri L., Iwata F., Kaiser-Kupfer M., Nagata M., Nakayasu K.,
A Hejtmancik JF., Teng C.T.,
A Hejtmancik JF., Teng C.T.,
T "Familial subepithelial corneal amyloidosis (gelatinous drop-like
T corneal dystrophy): exclusion of linkage to lactoferrin gene.";
Mol. Vision 4:31-32 (1998).

C -!- FUNCTION: TRANSFERRINS ARE IRON BINDING TRANSPORT PROTEINS WHICH
CAN BIND TWO ATOMS OF FERRIC IRON IN ASSOCIATION WITH THE BINDING
C -!- FUNCTION: LACTOFERROXINS A. B AND C HAVE OPIOLD ANTAGONIST
ACTIVITY. LACTOFERROXIN A SHOWS PREFERENCE FOR MU-RECEPTORS, WHILL
C LACTOFERROXIN A SHOWS PREFERENCE FOR MU-RECEPTORS. WHILL
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X.-RAY CRYSTALLOGRAPHY (2.5 ANGSTROMS) OF 20-353.
MEDLINE=97156796; PubMed=9003186;
Nicholson H., Anderson B.F., Bland T., Shewry S.C.,
Baker E.N.;
Baker E.N.;
High histidine ligand in human lactof
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EMBL;
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"Isolation
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Sun X.L., Baker H.M., Shewry S.C., Jameson G.B., Baker E.N.;
Sun X.L., Baker H.M., Shewry B.C., Jameson G.B., Baker E.N.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             binding properties and crystal
253-->methionine mutant.";
Biochemistry 36:341-346(1997).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Tani F., Iio K., Chiba H., Yoshikawa M.; "Isolation and characterization of opioi from human lactoferrin.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Jameson G.B., Anderson B.F., Norris G.E., Thomas D.H., Baker E.N., "Structure of human apolactoferrin at 2.0-A resolution. Refinement and analysis of ligand-induced conformational change.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Klintworth G.K., Sommer J.R., Obrian G., Qumsiyeh M.B., Lin P.-Y., Basti S., Redd
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                "Mutagenesis of the histidine ligand in human lactoferrin: binding properties and crystal structure of the histidine-
                                                                       Local
                                                                                        Match
                                                                                                                                                                                                                                                                                                                                                                                                             SUBCELLULAR LOCATION: Secreted.
                                                                                                                                                                                                                                                                                                                                                                           SIMILARITY: Belongs to the transferrin family.
                                                                                                                                                          X53961; CAA37914.1; -. U07643; AAB60324.1; -. M93150; AAA36159.1; -.
                                                                       Similarity
ARRARVVWAAVG 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         h G.K., Sommer J.R., Obrian G., Han L., Ahmed M.N., M.B., Lin P.-Y., Basti S., Reddy M.K., Kanal A., Hotta Kumaramanickavel G., Munier F., Schorderet D.F., L., Iwata F., Kaiser-Kupfer M., Nagata M., Nakayasu K.,
                                                                                                                                                                                                                                                                                                                                                                                            Composed of two
                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Chem. 54:1803-1810(1990).
                                                                                                                          AAA59511.1; -.
AAA58656.1; -.
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PDB; 1B7U; 02-FEB-99.
PDB; 1B7Z; 02-FEB-99.
PDB; 1F9B; 10-FEB-01.
PDB; 116B; 13-FEB-02.
PDB; 1QJM; 14-JAN-00.
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RNART; SM00094; TR PER; 2.

PROSITE; PS00205; TRANSFERRIM 1; 2.

PROSITE; PS00206; TRANSFERRIM 2; 2.

PROSITE; PS00207; TRANSFERRIM 3; 1.

PROSITE; PS00207; TRANSFERRIM 3; 1.
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15-JUL-1999
10-OCT-2003
                                                                                  CHAIN
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REPEAT
                                                                                                                                                                                                                                                                                                                                             This SWISS-PROT entry is copyright. It is produced through a collab between the Swiss Institute of Bioinformatics and the EMBL outse the European Bioinformatics Institute. There are no restrictions use by non-profit institutions as long as its content is in modified and this statement is not removed. Usage by and for comentities requires a license agreement (See http://www.isb-sib.ch/ar or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              resolution.";

J. Mol. Biol. 289:303-317(1999).

-!- FUNCTION: TRANSFERRINS ARE IRON BINDING TRANSPORT PROTEINS WHICH
-!- FUNCTION: TRANSFERRING IRON IN ASSOCIATION WITH THE BINDING
                                                                                                                                                                                                                          InterPro; IPR001156; Transferrin.
Pfam; PF00405; transferrin; 2.
                                                                                                                                                                                                                                                                                                                         EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                        -!- SUBUNIT: Monomer.
-!- SUBCELLULAR LOCATION:
-!- DOMAIN: Composed of tv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sharma A.K.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Paramasivam M., Srinivasan A., Yadav M.P., Singh T.P.; "CDNA sequence of mare lactoferrin."; Submitted (SEP-1998) to the EMBL/GenBank/DDBJ databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Perissodactyla; Equidae; Equus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sharma A.K., Paramasivam M., Srinivasan A., Yadav M.P., Singh T.P.;
"Three-dimensional structure of mare diferric lactoferrin at 2.6-A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   X-RAY CRYSTALLOGRAPHY (2.6 ANGSTROMS)
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Best Local Similarity 83.3%;
Matches 10; Conservative
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             STANDARD;
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15-DEC-1998
10-OCT-2003
                                                                                                                                                                                         SMART; SM00094; TR FER; 2
PROSITE; PS00205; TRANSFERRIN 1;
PROSITE; PS00206; TRANSFERRIN 2;
PROSITE; PS00207; TRANSFERRIN 3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Hutchens T.W., Magnuson J.S., Yip T.-T.;

"Rapid purification of porcine colostral whey lactoferrin by affinity chromatography on single-stranded DNA-agarose. Characterization, chromatography on single-stranded and amino acid sequence.";

amino acid composition and N-terminal amino acid sequence.";

Biochim. Biophys. Acta 999:323-329(1989).

-i- FUNCTION: TRANSFERRING ARE IRON BINDING TRANSPORT PROTEINS WHICH CAN BIND TWO ATOMS OF FERRIC IRON IN ASSOCIATION WITH THE BINDING
                                                                                                                                                                                                                                                                        EMBL; M92089; AAA31102.1;
EMBL; M81327; AAA31059.1;
PIR; A45543; A45543.
HSSP; O77698; 1CE2.
                                                                                                                                                                                                                                                                                                                                use by non-profit institutions as long as its content modified and this statement is not removed. Usage by ar entities requires a license agreement (See http://www.isbor send an email to license@isb-sib.ch).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE=92367939; PubMed=1503259;
Alexander L.J., Levine W.B., Teng C.T., Beattie C.W.;
Alexander and sequencing of the porcine lactoferrin cDNA.";
PCloning and sequencing the porcine lactoferrin cDNA.";
Anim. Genet. 23:251-256(1992).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Eukaryota; Metazoa;
Mammalia; Eutheria;
NCBI_TaxID=9823;
                                                                                                         DISULFID
                                                                                                                                                                             Transport;
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MEDLINE=90105538;
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MEDLINE=92379101; Publ
Lyndon J.P., O'Malley
Conneely O.M.;
                                                                                                                                                                                                                                     InterPro; IPR001156; Transferrin.
Pfam; PF00405; transferrin; 2.
PRINTS; PR00422; TRANSFERRIN.
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DOMAIN: Composed of two homologous domains.

SIMILARITY: Belongs to the transferrin family.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                OF AN ANION, USUALLY BICARBONATE. SUBUNIT: Monomer.
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8 (Rel. 37,
3 (Rel. 42,
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lley B.R., Saucedo
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               rimary amino acid sequence
Acta 1132:97-99(1992).
  Chordata; Craniata; Vertebrata; Euteleostomi; Cetartiodactyla; Suina; Suidae; Sus.
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Matches
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Q9TUMO; Q9MZS5;
16-OCT-2001 (Rel
[2]
SEQUENCE FROM N.A.
TISSUE=Mammary gland;
Timmamivam M., Srinivasan
                                                      SEQUENCE FROM N.A.
STRAINS-Somali; TISSUE-Lactating mammary gland;
Kappeler S.R., Ackermann M., Farah Z., Puhan Z.;
"Sequence analysis of camel (Camelus dromedarius)
int. Dairy J. 9:481-486(1999).
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Mammalia; Eutheria;
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                                                                                                                                                                                         Camelus dromedarius
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Transport; Iron transport; Glycoprotein; Metal-binding; Repeat; Signal; 3D-structure.
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P24627; Q29629; Q9MZY3;
01-MAR-1992 (Rel. 21, Createc
01-OCT-1993 (Rel. 27, Last se
10-OCT-2003 (Rel. 42, Last ar
Lactotransferrin precursor ([LFCIN B)].
                                                                                                                                                                                                                                                            TISSUE=Lung;
Tsang T.C., Burns D.K., Wang
"Cloning of a 80-kD advanced
protein from bovine lung.";
FASEB J. 6:233-233(1991).
SEQUENCE OF 20-59.

MEDITINE=90031466; PubMed=2805645;

Rejman J.J., Hegarty H.M., Hurley W.L.;

"Purification and characterization of bovine secretions of the involuting mammary gland: imultiple molecular weight forms.";
                                                                                                                       SEQUENCE
Nakamura
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Goodman R.E., Schanbacher F.L.;
"Bovine lactoferrin mRNA: sequence, analysis, and
                                                                                                                                                                                                                                                                                                                                                                                                                                                     Pierce A., Colavizza D., Dumanton. Montrauil J., Spik G.;
Montrauil J., Spik G.;
"Molecular cloning and sequence analysis of bovine lactotransferrin.";
RNT. J. Biochem. 196:177-184(1991).
                                                                                                                                                               SEQUENCE FROM N.A.
TISSUE=Blood, and Mammary gland;
TISSUE=94266164; PubMed=8206385;
MEDLINE=94266164; PubMed=8206385;
Seyfert H.-M., Tuckoricz A., Interthal H., Koc
"Structure of the bowine lactoferrin-encoding
Gene 143:265-269(1994).
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Biochem. Biophys.
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MEDLINE=91160550; PubMed=2001696;
Pierce A., Colavizza D., Benaissa M., Maes
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Bovidae; Bovinae; Bos.
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EMBL; L19983; AAA21722.1; JOINED.

EMBL; L19983; AAA21722.1; JOINED.

EMBL; L19984; AAA21722.1; JOINED.

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"Three-dimensional solution structure of lactoferricin B, an
antimicrobial peptide derived from bovine lactoferrin.";
Biochemistry 37:4288-4298(1998).

-i- FUNCTION: TRANSFERRINS ARE IRON BINDING TRANSPORT PROTEINS WHICH
CAN BIND TWO ATOMS OF FERRIC IRON IN ASSOCIATION WITH THE BINDING
OF AN ANION, USUALLY BICARBONATE.

-i- FUNCTION: LACTOFERRICIN B IS AN ANTIMICROBIAL PEPTIDE.
-i- SUBCELUIDAR LOCATION: Secreted.
-i- SUBCELUIDAR LOCATION: Secreted.
-i- DOMAIN: Composed of two homologous domains.
-i- SIMILARITY: Belongs to the transferrin family.
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MEDLINE=98062367; PubMed=9398529;
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EMBL; X78902; CAA55517.1; -.
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Pfam; PF00405; transferrin; 2.
PRINTS; PR00422; TRANSFERRIN.
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MEDIINE-94380047; PuhMed=8093048;

le Provost F., Nocart M., Guerin G., Martin P.;

le Provost F., Nocart M., Guerin G., Martin P.;

"Characterization of the goat lactoferrin cDNA. Assignment of the relevant locus to bovine U12 synteny group.";

Biochem. Biophys. Res. Commun. 203:1324-1332(1894).

-i- FUNCTION: TRANSFERRINS ARE IRON BINDING TRANSPORT PROTEINS WHICH CAN BIND TWO ATOMS OF FERRIC IRON IN ASSOCIATION WITH THE BINDING OF AN ANION, USUALLY BICARBONATE.

-i- SUBGINIT: Monomer (By similarity).

-i- SUBCELLULAR LOCATION: Secreted.

-i- DONAIN: Composed of two homologous domains.

-i- SINGLEARITY: Belongs to the transferrin family.
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Bovidae; Caprinae; Capra.
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AC PO8071; P70690; Q61799; Q922P2;

DT 01-AUG-1998 (Rel. 08, Created)

DT 10-CT-2003 (Rel. 41, Last sequence update)

DT 10-CCT-2003 (Rel. 42, Last annotation update)

Eactotransferrin precursor (Lactoferrin).

GN LTF.

OS Mus musculus (Mouse).

CC Mammalia; Eutheria; Chordata; Craniata; Vertebra

OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muri

OX NCBI_TaxID=10090;

RN [1]

RP SEQUENCE FROM N.A.

RC TISSUS=Uterus;

RA Pentecost B.T., Teng C.T.;

RA Pentecost B.T., Teng C.T.;

R1 "Lactotransferrin is the major estrogen inducibl
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PubMed=3611056; eng C.T.; is the major estrogen inducible protein of mouse
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Sciurognathi; Muridae;
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Buteleostomi;
; Murinae; Mus

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CARBONATE 1 (BY SIMILARITY).

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CARBONATE 1 (VIA AMIDE NITRO SIMILARITY).

CARBONATE 2 (BY SIMILARITY).

CARBONATE 2 (DY AMIDE NITRO SIMILARITY).
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2-> K (IN REF. 2).
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4-> R (IN REF. 2).
5-> R (IN REF. 2).
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An Diatchenko L., Marusina K., Farmer A.A., Rubin G.M., Hong L.,
An Stapleton M., Soares M.B., Bonaldo M.F., Cassavant T.L., Scheetz T.E.,
An Brownstein M.J., Usdin T.B., Toshiyuki S., Carninci P., Prange C.,
An Raha S.S., Loquellano N.A., Peters G.J., Abramson R.D., Mullahy S.J.,
An Bosak S.A., McBwan P.J., McKernan K.J., Malek J.A., Gunaratne P.H.,
An Richards S., Worley K.C., Hale S., Garcia A.M., Gay L.J., Hulyk S.W.,
An Richards S., Worley K.C., Hale S., Garcia A.M., Gay L.J., Hulyk S.W.,
An Willalon D.K., Muzny D.M., Sodergren E.J., Lu X., Gibbs R.A.,
An Whiting M., Madan A., Young A.C., Shevchenko Y., Bouffard G.G.,
An Whiting M., Madan A., Young A.C., Shevchenko Y., Bouffard G.G.,
An Whiting M., Madan J.W., Green E.D., Dickson M.C.,
An Blakesley R.W., Touchman J.W., Green E.D., Dickson M.C.,
An Blakesley R.W., Touchman J.W., Schmutz J., Myers R.M.,
An Butterfield Y.S.N., Krzywinski M.I., Skalska U., Smailus D.E.,
Butterfield Y.S.N., Krzywinski M.I., Skalska U., Smailus D.E.,
Chencych A., Schein J.E., Jones S.J.M., Marra M.A.,
"Generation and initial analysis of more than 15,000 full-length
human and mouse cDNA sequences.",
proc. Natl. Acad. Sci. U.S.A. 99:16899-16903 (2002).
                                                                                                                                                                                                                                                                           EMBL; J03298; AAA40525.1; -.
EMBL; D88510; BAA13633.1; -.
EMBL; BC006904; AAH06904.1; -.
EMBL; M74778; AAA39427.1; -.
HSSP; P02788; 1CB6.
MGD; MGI:96837; Ltf.
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or send a
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      "Characterization of estrogen-responsive J. Biol. Chem. 266:21880-21885(1991). -i- FUNCTION: TRANSFERRINS ARE IRON BINDI CAN BIND TWO ATOMS OF FERRIC IRON IN OF AN ANION, USUALLY BICARBONATE.
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Strausberg R.L., Feingold E.A., Grouse L.H., Derge J.G.,
Klausner R.D., Collins F.S., Wagner L., Shenmen C.M., Schuler G.D.,
Klausner R.D., Celbins F.S., Wagner L., Schaefer C.F., Bhat N.K.,
Altschul S.F., Zeeberg B., Buetow K.H., Schaefer C.F., Hsieh F.,
                                                                                                                        PROSITE; PS00205; TRANSFERRIN 1; 1.
PROSITE; PS00206; TRANSFERRIN 2; 2.
PROSITE; PS00207; TRANSFERRIN 3; 2.
Transport; Iron transport; Glycoprotein; Metal-binding; Repeat;
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J. Biol. Chem. 262:10134-10139(1987).
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Pfam; PF00405; transferrin; 2.
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SUBCELLULAR LOCATION: Secreted.
DOMAIN: Composed of two homolog
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MEDLINE=99097242; PubMed=9878543;
Bellingham J., Gregory-Evans K., Gregory-Evans C.Y.;
"Sequence and tissue expression of a novel human carbonic
                                                                                                                                                                          075493; 060596; Q9UEC4;
30-MAY-2000 (Rel. 39, Created)
16-OCT-2001 (Rel. 40, Last sequence update)
10-OCT-2003 (Rel. 42, Last annotation update
Carbonic anhydrase-related protein 2 precur
(CA-XI) (Carbonic anhydrase-related protein
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Mammalia; Eutheria;
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                                                                                                                                                                              (CARP-2) (CARP XI)
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(CA-RP X
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RA Strausberg R.L., Feingold E.A., Grouse L.H., Derge J.G.,
RA Klausner R.D., Collins F.S., Wagner L., Shenmen C.M., Schuler G.D.,
RA Altschul S.F., Zeeberg B., Buetow K.H., Schaefer C.F., Bhat N.K.,
RA Altschul S.F., Zeeberg B., Buetow K.H., Schaefer C.F., Bhat N.K.,
RA Hopkins R.F., Jordan H., Moore T., Max S.I., Wang J., Hsieh F.,
RA Diatchenko L., Marusina K., Farmer A.A., Rubin G.M., Hong L.,
RA Diatchenko L., Marusina K., Farmer A.A., Rubin G.M., Hong L.,
RA Diatchenko L., Marusina K., Farmer A.A., Rubin G.M., Hong L.,
RA Diatchenko L., Marusina K., Farmer A.A., Rubin G.M., Hong L.,
RA Stapleton M., Soares M.B., Bonaldo M.F., Casrunnci P., Prange C.,
RA Raha S.S., Loquellano N.A., Peters G.J., Abramson R.D., Mullahy S.J.,
RA Raha S.S., Loquellano N.A., Peters G.J., Abramson R.D., Mullahy S.J.,
RA Richards S., Worley K.C., Hale S., Garcia A.M., Gay L.J., Hulyk S.W.,
Villalon D.K., Muzny D.M., Sodergren E.J., Lu X., Gibbs R.A.,
Villalon D.K., Muzny D.M., Sodergren E.J., Lu X., Gibbs R.A.,
Rahay J., Helton S., Ketteman M., Madan A., Rodrigues S., Sanchez A.,
RA Hiting M., Madan A., Young A.C., Shevchenko Y., Bouffard G.G.,
RA Holy J., Helton S., Ketteman M., Madan A., Rodrigues S., Sanchez A.,
RA Balkesley R.W., Touchman J.W., Green E.D., Dickson M.C.,
RA Rodriguez A.C., Grimwood J., Schmutz J., Myers R.M.,
RA Butterfield Y.S.N., Krzywinski M.I., Skalska U., Smailus D.E.,
Schnerch A., Schein J.E., Jones S.J.M., Marra M.A.,
"Generation and initial analysis of more than 15,000 full-length
human and mouse cDNA sequences.",
Proc. Natl. Acad. Sci. U.S.A. 99:16899-16903(2002).
                                                                                                                                                                                                                                                           EMBL; BC002662; AAH02662.1
EMBL; AF050106; AAD08802.1
PIR; JE0375; JE0375
HSSP; P00918; 1BV3
Genew; HCMC:1370; CA11.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entitles requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               "Evolutionarily conserved, 'acatalytic' carbonic anhyceprotein XI contains a sequence motif present in the me sauvagine: the human CA-RP XI gene (CA11) is embedded secretor gene cluster and the DBP gene at 19q13.3."; Genomics 54,484,493 (1998).
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GO; GO:0004089; F:carbonate dehydratase InterPro; IPR001148; Euk COanhd. Pfam; PF00194; carb_anhydrase; 1. ProDom; PD000865; Euk COanhd; 1. PROSITE; PS00162; EUK_CO2_ANHYDRASE; FAI
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EMBL; AB018195;
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Biochem. Biophys.
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SUBCELLULAR LOCATION: Secreted (Potential).
TISSUB SPECIFICITY: EXPRESSED ABUNDANTLY IN THE BRAIN WITH
MODERATE EXPRESSION ALSO PRESENT IN SPINAL CORD AND THYROID.
SIMILARITY: Belongs to the eukaryotic-type carbonic anhydrase
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Res. Commun.
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1) is embedded between the
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SIGNAL
CHAIN
CONFLICT
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                                                                                                                          This SWISS-PROT entry is copyright. It is produced through a collab between the Swiss Institute of Bioinformatics and the EMBL outst the European Bioinformatics Institute. There are no restrictions use by non-profit institutions as long as its content is in modified and this statement is not removed. Usage by and for comentities requires a license agreement (See http://www.isb-sib.ch/anor send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                  Fleischmann R.D., Alland D., Eisen J.A., Carpenter L., White O., Peterson J., DeBoy R., Dodson R., Gwinn M., Haft D., Hickey E., Kolonay J.F., Nelson W.C., Umayam L.A., Ermolaeva M., Salzberg S., Delcher A., Utterback T., Waidman J., Khouri H., Gill J., Mikula Bishai W., Jacobs W.R. Jr., Venter J.C., Fraser C.M.; "Whole-genome comparison of Mycobacterium tuberculosis clinical a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        30-MAY-2000 (Rel. 39, Created)
30-MAY-2000 (Rel. 39, Last sequence update)
10-OCT-2003 (Rel. 42, Last annotation update)
Putative cytochrome P450 135A1 (EC 1.14.-.).
CYP135A1 OR RV0327C OR MT0342 OR MTCY63.32C.
                                                                                                                                                                                                                                                                                  J. Bacteriol.
-!- SIMILARIT
                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A.
STRAIN=CDC 1551 / Oshkosh;
MEDLINE=22206494; PubMed=12218036;
Fleischmann R.D., Alland D., Eisen
                                                        EMBL; Z96800; CF
EMBL; AE006940;
PIR; H70526; H70
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                                                                                                                                                                                                                                                                                                                      laboratory strains."
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SIMILARITY: Belongs to the cytochrome
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RESULT 11
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21-JUL-1986 (Rel
21-JUL-1986 (Rel
30-MAY-2000 (Rel
R-plasmid NR1 : J. Mol. Biol. : [6]
                  PLASMID=IncFII NR1;
MEDLINE=85.60860; PubMed=2580099;
Womble D.D., Sampathkumar P., Easton A.M.,
"Transcription of the replication control
R-plasmid NR1 in vitro and in vivo.";
J. Mol. Biol. 181:395-410(1985).
                                                                                                                                                                                                                         PLASMID=IncFII NR1;
MEDLINE=89011975; PubMed=3050127;
Dong X., Womble D.D., Rownd R.H.;
"In-vivo studies on the cis-acting
IncFII plasmid NR1.";
                                                                                                                                                                                                                                                                                                                                                                     replication: identification of a rho-dependent transcriptic terminator required for cis-action of repA protein."; Nucleic Acids Res. 16:6493-6514(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Nature [3]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PLASMID=IncFII R100, and IncFII R MEDLINE-81173118; PubMed=6163994; Rosen J., Ryder T., Ohtsubo H., O
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MEDLINE=81074309; PubMed=7003300; Rosen J., Ryder T., Inokuchi H., Ohtsubo H., Ohtsubo E.; Rosen J., Ryder T., Inokuchi H., Ohtsubo H., Ohtsubo E.; "Genes and sites involved in replication and incompatibility of RI00 plasmid derivative based on nucleotide sequence analysis."; R100 plasmid derivative based on nucleotide sequence analysis."; Mol. Gen. Genet. 179:527-537(1980).
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PROSITE; PS00086; CYTOCHROME_P450; 1.

Hypothetical protein; Oxidoreductase; Monooxygenase; Heme.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Rosen J., Ryder T., Ohtsubo H., Ohtsubo "Role of RNA transcripts in replication number control in antibiotic resistance Nature 290:794-797(1981).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Plasmid IncFII R100, Plasmid IncFII R1, and Plasmid IncFII NR1.
Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriale
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Plasmid IncFII R100,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REPA OR REPA1
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PLASMID=IncFII R1;
MEDLINE=88289416; PubMed=3041379;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE OF 270-285 FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Enterobacteriaceae;
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                                                                                                                                                          SEQUENCE FROM N.A
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(Rel. 01,
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70.0%;
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Last annotation
n protein.
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Matches
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EMBL; J01770; -; NOT ANNOTATED_CDS.

EMBL; X1257; CAA31160.1; -.

EMBL; X22776; CAA31263.1; -.

EMBL; X02302; CAA26168.1; -.

EMBL; X02302; CAA26169.1; ALT_INIT.

EMBL; X02302; CAA26169.1; -.

EMBL; X02302; CAA26169.1; -.

EMBL; X02302; CAA26169.1; -.

EMBL; X02302; CAA26169.1; -.

EMBL; X02302; CAA26067.1; -.

PIR; A03602; IDECRP

PIR; A03602; IDECRP
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Q9YB03;
30-MAY-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the EM the Buropean Bioinformatics Institutions. There are no restruse by non-profit institutions as long as its content modified and this statement is not removed. Usage by and entitles requires a license agreement (See http://www.isb-sentitles.requires a license agreement (See
                                                                                       Kawarabayasi Y., Hino Y., Horikawa H., Yamazaki S., Haikawa Jin-no K., Takahashi M., Sekine M., Baba S.-I., Ankai A., Ku Hosoyama A., Fukui S., Nagai Y., Nishijima K., Nakazawa H., Takamiya M., Masuda S., Funahashi T., Tanaka T., Kudoh Y., Yamazaki J., Kushida N., Oguchi A., Aoki K.-I., Kubota K., Nakamura Y., Nomura N., Sako Y., Kikuchi H.; Nomura N., Sako Y., Kikuchi H.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation -
                                                    -i-
                                                              crenarchaeon, Aeropyrum pernix Kl.";
DNA Res. 6:83-101(1999).
                                                                                                                                                                                                                                                     Aeropyrum pernix.
Archaea; Crenarchaeota;
Desulfurococcaceae; Aero
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Pfam; PF02387; IncFII repA; 1.
Plasmid; DNA replication; Plasmid copy control
Plasmid; DNA replication; Plasmid copy control
CONFLICT 55 8 --> H (IN REF. 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          or send an email to license@isb-sib.ch).
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                                                                                                                                                                                      MEDLINE=99310339;
                                                                                                                                                                                                                 SEQUENCE
                                                                                                                                                                                                                                          NCBI_TaxID=56636;
                                                                                                                                                                                                                                                                                                             Hypothetical
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16-OCT-2001
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                                                    SIMILARITY: Belongs
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(Rel. 39, Last sequence up
(Rel. 40, Last annotation
protein APE1792.
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Bioinformatics Institute.
                                                                                                                                                                                                                                                                                                                                                                              STANDARD;
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87.5%;
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                                                                                                                                                                                                                                                                     Thermoprotei; Desulfurococcales;
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Pred. No. 6.4;
1; Mismatches
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A21C9D59D24B26BB
                                                      UPF0097
                                                                                                                                                                                                                                                                                                                                     update)
                                                                                                                                                                                                                                                                                                                                                                                176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       moved. Usage by and for commercial (See http://www.isb-sib.ch/announce/
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RESULT 13
GIDB_BIFILO
ID GIDB 3
AC 086674
DT 10-0CT
DT 10-0CT
DT 10-0CT
DE protei
GN GIDB 0
OS Bifido
OC Bactex
OC BIFIO
RA PRIMIN
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10-OCT-2003
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entities requires a license agreement 'Cor send an email to license agreement 'Cor
                                                                                                                                                                                                                                                                                                                                                                                         the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entitles requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              STRAINENCC 2705;
MEDLINE=2229477; PubMed=12381787;
Schell M.A., Karmirantzou M., Snel B.
Pessi G., Zwahlen M.-C., Desiere F.,
Pridmore R.D., Arigoni F.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    10-0CT-2003 (Rel. 42, Created)
10-0CT-2003 (Rel. 42, Last sequence update)
10-0CT-2003 (Rel. 42, Last annotation updat
Methyltransferase gidB (EC 2.1.-.-) (Glucos
                                                                                                                                                                                                                                                                          EMBL; AE014686; AAN24468.1; -- HAMAB; MF_00074; -; 1. InterPro; IPR003682; GidB. Pfam; PF02527; GidB; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Interpro; IPRO04175; 25_ligase.
Pfam; PF02834; 25_ligase; 2.
Hypothetical protein; Complete p
SEQUENCE 176 AA; 19666 MW; C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Bacteria; Actinobacteria; Actinobacteridae; Bifidobacteriaceae; Bifidobacterium.
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TIGRFAMS; TIGR00138; gidB; 1.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Bifidobacterium
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      the human gastrointestinal tract.";
c. Natl. Acad. Sci. U.S.A. 99:14422-14427(2002).
FUNCTION: Probable S-adenosyl-L-methionine depo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FUNCTION: Probable S-adenosyl-L-methionine dependent methyltransferase specific for a sterol and/or lipid substrate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SWISS-PROT entry is copyright. It is produced through a collaboration the Swiss Institute of Bioinformatics and the EMBL outstation
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OR BL0646.
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9; Conserv
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_O60755;
MEDLINE-20057165; PubMed=10591208;
MEDLINE-20057165; PubMed=10591208;
Dunham I., Hunt A.R., Collins J.E., Bruskiewich R., Beare D.M.,
Clamp M., Smink L.J., Ainscough R., Almeida J.P., Babbage A.K.,
Bardy M., Barlow K.F., Bates K.N., Beasley O.P.,
Bardy C.P., Blakey S.B., Bridgeman A.M., Buck D., Burgess J.,
Burrill W.D., Burton J., Carder C., Carter N.P., Chen Y., Clark G.,
Clegg S.M., Cobley V.E., Cole C.G., Collier R.E., Connor R.,
Conroy D., Corby N.R., Coville G.J., Cox A.V., Davis J., Dawson E.,
Dhami P.D., Dockree C., Dodsworth S.J., Durbin R.M., Ellington A.G.,
Evans K.L., Fey J.M., Fleming K., French L., Garner A.A.,
Gilbert J.G.R., Goward M.E., Grafham D.V., Griffiths M.N.D., Hall C.
Hall R.E., Hall-Tamlyn G., Heathcott R.W., Ho S., Holmes S.,
Hunt S.E., Jones M.C., Kershaw J., Kimberley A.M., King A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Iismaa T.P., Fathi Z., Hort Y
Sutherland G.R., Shine J.,
"Structural organization and
galanin receptor genes.",
Ann. N.Y. Acad. Sci. 863:56-6
                                                                                                                                                                                                                                                                                                                                                                                                                Suwa M., Sato T., Okouchi 1
Tsutsumi S., Aburatani H.,
"Genome-wide discovery and
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15-JUL-1999 (Rel. 38,
10-OCT-2003 (Rel. 42,
Galanin receptor type
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MEDLINE=99127120;
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atani H., Asai K.,
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Shiao L.-L., Hreniuk D.L., Tan C.P., Evans J., Abramovitz M., Chateauneuf A., Coulombe N., Ng G., Johnson M.P., Tharian A., Khoshbouei H., George S.R., Smith R.G., O'Dowd B.F.; "Molecular characterization and expression of cloned human galanin receptors GALR2 and GALR3."; J. Neurochem. 71:2239-2251(1998).
                                                                                                                             MEDITINE-99048961; PubMed-9832121; MEDITINE-99048961; PubMed-9832121; Kolakowski L.F. Jr., O'Neill G.P., Howard A.D., Broussard S.R., Sullivan K.A., Feighner S.D., Sawzdargo M., Nguyen T., Kargman Shiao L.-L., Hreniuk D.L., Tan C.P., Evans J., Abramovitz M., Shiao L.-L., Hreniuk D.L., Tan C.P., Evans J., Abramovitz M.,
                                                                                                                                                                                                                                                                                              Bennett M.M., Lescoe M.K., Gallipoli P.Z., "Homologue of the human galanin 2 receptor uterus cDNA library."; Submitted (MAY-1998) to the EMBL/GenBank/DI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A.

MEDLINE=98389766; PubMed=9722565;

Smith K.E., Walker M.W., Artymyshyn R., Bard J., Borowsky

Tamm J.A., Yao W.-J., Vaysse P.J.-J., Branchek T.A., Geral
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Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
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Ballett G.K., Langferd C.F., Leversche M.A., Libyd C.M. Libyd D.M.,

Maktyn ID., McLaren S., McMarray A.A., Matthews L.H. Mocann O.T.,

Ball Golli C.M., Pavitt R., Pearce A.V., Dearson D., Phillimore B.J.C.T.,

Ball Golli C.M., Pavitt R., Pearce A.W., Dearson D., Phillimore B.J.C.T.,

Ball Scott C.E., Schal H.K., Skuce C.D., Smalley S., Smith M.I.,

Ball Milliams L.M., Shibaya K., Koshiaki Y., Aski N., Mitanyama S.,

Balliliams L.M., Milliams B.A., Milliams D.H., Milliams L.M.,

Balliliams L.M., Milliams B.A., Milliams M.M., Milliams L.M.,

Balliliams L.M., Milliams B.A., Milliams M.M., Milliams J.M.,

Balliliams L.M., Shibaya K., Voshiaki Y., Aski N., Mitanyama S.,

Balliliams L.M., Shibaya K., Voshiaki Y., Aski N., Mitanyama S.,

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Balliliams L.M., Shibaya H., Shibaya H., Balling T.,

Balliliams L.M., Mang Z., Mite J., Millingham D., Willingham D.,

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Thuman and mouse cDNA sequences.", 172

Thuman and mouse cDNA sequences.", 173

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TISSUE=Colon;
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Oshima A., Kyle J.W., Miller R.D., Hoffmann J.W., Powell P.P.
Grubb J.H., Sly W.S., Tropak M., Guise K.S., Gravel R.A.;
"Cloning, sequencing, and expression of cDNA for human beta-
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TISSUE=Placenta;
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63.6%;
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EXTRACELLULAR (POTENTIAL).

5 (POTENTIAL).

CYTOPLASMIC (POTENTIAL).

6 (POTENTIAL).

EXTRACELLULAR (POTENTIAL).

7 (POTENTIAL).
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1; Mismatches
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CYTOPLASMIC (POTENTIAL).
N-LINKED (GLCNAC. .) (POTENTIAL).
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"Analysis gene.";

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В. М.,

Grubb J.H.,

Christensen S.G.,

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Genomics SEQUENCE

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Tomatsu S., Fukuda S., Sukegawa K., Ikedo Y., Yam; Sasaki T., Okamoto H., Kuwahara T., Yamaguchi S., Shintaku H., Isshiki G., Orii T.; "Mucopolysaccharidosis type VII: characterization molecular heterogeneity."; am. J. Hum. Genet. 48:89-96(1991).
                                                                                                                                                                                                                                                                                                                                                                                               VARIANTS MPS-VII VAL-354 AND TRP-611.
MEDLINE=94154731; PubMed=8111413;
WU B.M., Sly W.S.;
"Mutational studies in a patient with the mucopolysaccharidosis type VII.";
Hum. Mutat. 2:446-457(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEDLINE=96185449; PubMed=8599764; Jain S., Drendel W.B., Chen Z.W., Mathe "Structure of human beta-glucuronidase targeting and active-site motifs."; Nat. Struct. Biol. 3:375-381(1996).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TISSUE=Placenta;
MEDLINE=92162201; PubMed=1311180;
MEDLINE=92162201; PubMed=1311180;
Tanaka J., Gasa S., Sakurada K., Miyazaki T., Kasai
"Characterization of the subunits and sugar moiety cand leukemic beta-glucuronidase.";
Biol. Chem. Hoppe-Seyler 373:57-62(1992).
                                                                                                                                                                    VARIANT MPS-VII CYS-627.
MEDLINE=93190983; PubMed=7680524;
Minched J.M., Klinkenberg M., Wu B.M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Vervoort R., Lissens W., Liebaers I.;
"Molecular analysis of a patient with hydrops fetalis
glucuronidase deficiency, and evidence for additional
Hum. Mutat. 2:443-445(1993).
                                                                                                        "Mutational analysis of a patient with mucopolysaccharidosis VII, and identification of pseudogenes."; Am. J. Hum. Genet. 52:517-526(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Zhang H., Li X.-J., Martin D.B., Aebersold R., "Identification and quantification of N-linked hydrazide chemistry, stable isotope labeling and Nat. Biotechnol. 21:660-666(2003).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TISSUE=Fibroblast;
MEDLINE=85232043; PubMed=3924735;
Guise K.S., Korneluk R.G., Waye J., Lamho
Palmer R., Ganschow R.E., Sly W.S., Grave
"Isolation and expression in Escherichia
human beta-glucuronidase.";
Gene 34:105-110(1985).
                                                                                                                                                                                                                                                                                                                                                VARIANTS MPS-VII CYS-382 AND VAL-619 MEDLINE=91090114; PubMed=1702266;
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MEDLINE=22660472; PubMed=12754519;
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Kyle J.W., Sly W.S.;
"Analysis of the 5' flanking
   D-glucuronate.
SUBUNIT: Homotetramer.
SUBCELLULAR LOCATION:
                                                   FUNCTION: PLAYS AN IMI
AND KERATAN SULFATES.
CATALYTIC ACTIVITY: A
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   GO; GO:0004566; F:beta-glucuronidase activity; TAS
GO; GO:0005975; P:carbohydrate metabolism; TAS.
GO; GO:0006277; P:glycosaminoglycan catabolism; TA
InterPro; IPR008979; Gal bind like.
InterPro; IPR008101; Glyco_hydro_21g.
InterPro; IPR006102; Glyco_hydro_21g.
InterPro; IPR006102; Glyco_hydro_21g.
InterPro; IPR006104; Glyco_hydro_25B.
InterPro; IPR006104; Glyco_hydro_27IM.
Pfam; PF02836; Glyco_hydro_2; 1.
Pfam; PF02836; Glyco_hydro_2; 1.
Pfam; PF02837; Glyco_hydro_2 N; 1.
PRINTS; PR00132; GLYCO_hydro_2 N; 1.
PRINTS; PR00132; GLYCO_hydro_2 N; 1.
PRINTS; PR00132; GLYCO_hydro_2 N; 1.
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EMBL; BCC014142; AAH14142.1; -.
EMBL; M55002; AAA52622.1; -.
EMBL; M10618; AAA52621.1; -.
EMBL; M10618; AAA52621.1; -.
EMBL; S72462; AAD14101.1; -.
PIR; AA6581; A26581,
PDB; 13HG; 17-SEP-97.
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CARBOHYD
CARBOHYD
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PROSITE; PS00608; GLYCOSYL_HYDROL_F2_2; 1.
Hydrolase; Glycosidase; Lysosome; Glycoprotein; Signal;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MIM;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                   VARIANT
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                                                                                                                                                                                                                                                                                                                                                                                                                                                Mucopolysaccharidosis;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       IsoId=P08236-2; Sequence=VSP_001799; PTM: GIYCOSYLATED WITH 3 TO 4 N-LINKED OLIGOSACCHARIDE CHAINS. DISEASE: Defects in GUSB are the cause of mucopolysaccharidosis type VII (MPS-VII) [MLM:253220]; also known as Sly syndrome. This an autosomal recessive disorder characterized by excessive dermatan and heparan sulfates in the urine and Hurler-like
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SIMILARITY:
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R -> C (in MPS-VII).
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R -> W (in MPS-VII).
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A -> V (in MPS-VII).
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P -> L (in dbSNP
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MEDLINE=94154730;

Tomatsu S.,

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Query Match
Best Local Similarity 58.3%; Pred. No. 32;
Matches 7; Conservative 2; Mismatches 3; Indels 0; Gaps 0;
Qy 1 ARRARVVNAAVG 12
Qy 1 ARRARVVNAAVG 12
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Search completed: September 1, 2004, 00:10:45

Job time: 5.24667 secs
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Q93vw3 oxyza sativ
Q8c14 bradyrhizob
Q86cX7 bos taurus
Q7u292 mycobacteri
Q98923 gallus gall
Q967x6 drosophila
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O8iu92 homo sapien
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O8wmn8 sus scrofa
O7ys20 sus scrofa
O95m57 bos taurus
O59702 pseudomonas
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ALIGNMENTS

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RESULT 1
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A Strausberg R.;

C Sthmitted (FBE-2002) to the EMBL/GenBank/DDBJ databases.

C I FUNCTION: TRANSFERRINS ARE IRON BINDING TRANSPORT PROTEIN

C C OF AN ANION, USUALLY BICARBONATE (BY SIMILARITY).

C I SIMILARITY: BELONGS TO THE TRANSFERRIN FAMILY.

C EMBL, BCC22347; AAR22347.1; ...

R GG; GO:0005576; C:extracellular; IEA.

R GG; GO:0005576; C:extracellular; IEA.

R GG; GO:0006819; F:ferric iron binding; IEA.

R GG; GO:0006859; P:iron ion transport; IEA.

R GG; GO:0006859; P:transport; IEA.

R GG; GO:0006850; P:transport; IEA.

R GG; GO:0006810; P:transport; IEA.
Query Match
Best Local Similarity
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QSTCD2QC (TEMBLrel 21,
QSTCD2QC (TEMBLrel 21,
QSTCD2QC (TEMBLrel 25,
QSTCD2QC (TEMBLrel 25,
                                                                                                                                  InterPro; IPR001156; Transferrin.
Pfam; PF00405; transferrin; 2.
PRINTS; PR00402; TRANSFERRIN.
SMART; SM00094; TR FER; 2.
PROSITE; PS00205; TRANSFERRIN 1; 2.
PROSITE; PS00206; TRANSFERRIN 2; 2.
PROSITE; PS00206; TRANSFERRIN 3; 2.
Clycoprotein; Iron transport; Metal-binding; Trasserrin 3; 2.
STOUCHE 711 AA; 78327 MW; 1B9C7EE097C45FAF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Homo sapiens (Human).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NCBI_TaxID=9606;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Chordata; Craniata; Vertebrata; Euteleostomi; Primates; Catarrhini; Hominidae; Homo.
    93.3%;
91.7%;
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Last annotation updat
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         Score 56;
Pred. No.
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                                                                                                                                            Transport.
FAF CRC64;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Q8IU92;
Q8IU92;
01-MAR-2003
   TISSUE=Seminal vesicle;
Baskar Singh S., Sarava
Singh T.P.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Kaplan J.B., Fine D.H.;

"Characterization of an amino acid polymorphism in the antibacterial domain of human lactoferrin.";

Submitted (JUL-2002) to the EMBL/GenBank/DDBJ databases.

EMBL; AY137470; AAN11304.1; -.

GO; GO:0005576; C:extracellular; IEA.

GO; GO:0005576; C:extracellular; IEA.

GO; GO:0006879; F:ferric iron binding; IEA.

GO; GO:0006826; F:iron ion homeostasis; IEA.

GO; GO:0006826; F:iron ion transport; IEA.

InterPro; IER001156; Transferrin.
                                                                                                                                                                                                                                                                                                                                                                                                               Eukaryota; Metazoa; Chordata; Mammalia; Eutheria; Primates;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pfam; PF00405; transferrin; 2.

PRINTS; PR00422; TRANSFERRIN.

SMART; SM00094; TR FER; 2.

PROSITE; PS00205; TRANSFERRIN 1; 2.

PROSITE; PS00205; TRANSFERRIN 2; 2.

PROSITE; PS00207; TRANSFERRIN 3; 2.

PROSITE; PS00207; TRANSFERRIN 3; 2.

SEQUENCE 711 AA; 78396 MW; 547AB9423C27CE67 CRC64;
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                                                                                                                                                                                                                   TISSUE=Mammary gland;
Shi Y.-Q., Zhang Y., Zheng Y.-M.;
"Homo sapiens Lactotransferrin Gene:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       01-MAR-2003
01-OCT-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Homo sapiens
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Mammalia; Eutheria;
                                                                                                      SEQUENCE FROM N.A.
                                                                                                                                                                 Submitted
                                                                                                                                                                                                                                                                                                                  SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                          NCBI_TaxID=9606;
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                                                                                                                                                              (OCT-2002)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (TrEMBLrel. 23, Created)
(TrEMBLrel. 23, Last sequence update)
(TrEMBLrel. 25, Last annotation update)
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Pred. No. 0.24;
D; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                           Craniata; V
Catarrhini;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRT;
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Matches 11
                                                                                            Query Match
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GO; GO:0005576; C:extracellular; IEA.
GO; GO:000819; F:ferric iron binding; IEA.
GO; GO:000819; F:ferric iron bonding; IEA.
GO; GO:0006879; P:iron ion homeostasis; IEA.
GO; GO:0006810; P:transport; IEA.
InterPro; IPR001156; Transferrin.
GG; GO:006810; bransferrin; 2.
PFAINTS; PR00427; TRANSFERRIN; 2.
PRINTS; SM00094; TR FER; 2.
PROSITE; PS00205; TRANSFERRIN 1; 2.
PROSITE; PS00205; TRANSFERRIN 3; 1.
GGlycoprotein; Iron transport; Metal-binding; Tr
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01-MAR-2002
01-OCT-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TISSUE-Mammary gland;
Wang S.-R., Lin T.-Y., Weng C.-N.;
Wang S.-R., Lin T.-Y., Weng C.-N.;
"Isolation and expression of porcine milk lactoferrin.";
Submitted (DEC-2001) to the EMBL/GenBank/DDBJ databases.
-!- FUNCTION: TRANSFERRINS ARE IRON BINDING TRANSPORT PROT
-!- GAN BIND TWO ATOMS OF FERRIC IRON IN ASSOCIATION WITH
-!- SIMILARITY: BELONGS TO THE TRANSFERRIN FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PROSITE;
Signal.
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CHAIN
SEQUENCE
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                                                                                                                                                              SEQUENCE
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EMBL, AY165046; AAN33998.1; -.
EMBL; AY178999; AAN75578.2; -.
EMBL; AY178999; F. Extracellular; IEA.
GO; GO:0006576; C:extracellular; IEA.
GO; GO:0006199; F:ferric iron binding; 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sus scrofa (Pig).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Lactoferrin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GO; GO:0006826; P:iron ion transport;
InterPro; IPR001156; Transferrin.
Pfam; PF00405; transferrin; 2.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SNWM8;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PROSITE; PS00205; PROSITE; PS00206;
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                                                                 Local
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SM00094; TR FEE; 2.
TE; PS00205; TRANSFERRIN 1;
TE; PS00206; TRANSFERRIN 2;
TE; PS00207; TRANSFERRIN 3;
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711 AA;
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                                    Conservative
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                                                                                                                                                           AA.
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78382
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Cetartiodactyla; Suina; Suidae;
                                                                                                                                                              77681 MW;
                                                           81.7%;
75.0%;
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91.7%;
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Pred. No. 0.24
0; Mismatches
                                                           Score 49; I
Pred. No. 3
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LACTOTRANSFERRIN.
547BFC42C9267E67
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Mismatches
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01-DEC-2001 (
01-DEC-2001 (
01-OCT-2003
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SEQUENCE
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EMBL; AY036581; AAK66816.1; JOINED.
GO; GO:0005576; C:extracellular; IEA.
GO; GO:0008199; F:ferric iron binding; IEA.
GO; GO:0008199; P:iron ion homeostasis; IEA.
GO; GO:0006879; P:iron ion transport; IEA.
InterPro; IPR001156; Transferrin.
Pfam; PF00405; transferrin; 2.
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01-OCT-2003
01-OCT-2003
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PISSUE-Mammary gland;
Peccrini C., Fogher C., Baldi A.;
Peccrini C., Fogher C., Baldi A.;
"The nucleotide sequence of porcine lactoferrin cDNA.";
Submitted (MAY-2003) to the EMBL/GenBank/DDBJ databases.
EMBL; AY306198; AAP70487.1; -.
                                                                                                                                                                                                                                                                                                                                        SEQUENCE OF 1-40 FROM N.A.
Li G., Zhang Y., Li N.;
"Analysis of the 5'-region of the bovine lactoferrin gene
                                                                                                                                                                                                                                                                                                                                                                                                             Mammalia; Eutheria; Ce
Bovidae; Bovinae; Bos.
NCBI_TaxID=9913;
                                                                                                                                                                                                                                                                                                                                                                                                                                               Eukaryota; Metazoa; Chordata; Crania;
Mammalia; Eutheria; Cetartiodactyla;
                                                                                                                                                                                                                                                                                                           Submitted (MAY-2001) to the EMBL/GenBank/DDBJ databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Bos taurus (Bovine).
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Mammalia; Eutheria;
NCBI_TaxID=9823;
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                                    h 75.0%;
Similarity 75.0%;
9; Conservative
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     ARRARVVWAAVG
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; 12491 MW;
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77522 MW; AAC8E1767E56BF6A CRC64;
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                                  Score 45; DB
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Ruminantia; Pecora; Bovoidea;
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                              Kim J., Fuller J.H., Cecchini G., McIntire W.S.; "Cloning, sequencing, and expression of the structural genes for the cytochrome and flavoprotein subunits of p-cresol methylhydroxylase from two strains of Pseudomonas putida."; J. Bacteriol. 176:6349-6361(1994).
                                                                                                                                                                                                 Pseudomonas putida.
Plasmid pRA4000.
Placteria; Proteobacteria;
Pseudomonadaceae; Pseudomo
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Q59702;
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PRINTS; PR00422; TRANSFERRIN.
SMART; SM00094; TR FER; 1.
PROSITE; PS00205; TRANSFERRIN 1;
PROSITE; PS00206; TRANSFERRIN 2;
PROSITE; PS00207; TRANSFERRIN 3;
                                                                                                              STRAIN=NCIMB 9866;
MEDLINE=95014081; PubMed=7929007;
                                                                                                                                                                                                                                                                                                        01-NOV-1996 (TrEMBLrel. 01, 01-NOV-1999 (TrEMBLrel. 12, 01-JUN-2003 (TrEMBLrel. 24,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pierce A., Colavizza D., BERNALLE.
Montreuil J., Spik G.;
"Molecular cloning and sequence analysis of bovine lactotransferrin.";
"Molecular cloning and sequence analysis of bovine lactotransferrin.";
Fir J. Biochem. 196:177-184(1991).
                                                                                                                                                                                                                                                                                      P-hydroxybenzaldehyde
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GO; GO:000199; F:ferric iron binding; IEA.
GO; GO:0006879; P:iron ion homeostasis; IEA.
GO; GO:0006826; P:iron ion transport; IEA.
InterPro; IPR001156; Transferrin.
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Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;

Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovoidea

Bovidae; Bovinae; Bos.

MCBI_TaxID=9913;
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01-OCT-2002 (TrEMBLrel.
01-OCT-2002 (TrEMBLrel.
01-OCT-2003 (TrEMBLrel.
SEQUENCE FROM N.A.
                                                                                                                                                  PARTIAL SEQUENCE FROM N.A.
                                                                                                                                                                               NCBI_TaxID=303;
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Pred. No. 9.6;
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-!- SIMILARITY: BELONGS TO THE ALDEHYDE DEHYD
EMBL; U96338; AAA75634.2; -.
PIR; T46684; T46684.
HSSP; p51977; IBXS.
GO; GO:0016491; F:oxidoreductase activity; IEA.
GO; GO:0008152; P:metabolism; IEA.
InterPro; IPR002086; Aldehyde_dehydr.
Pfam; PF00171; aldedh; I.
Query Match
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MEDLINE-20029269; PubMed=10565539;
Cronin C.N., Kim J.-H., Fuller J., Zhang X.-P., McIntire W.S.;
Cronin zation and sequences of p-hydroxybenzaldehyde dehydrogenase
"Organization and sequences for early enzymes of the p-cresol
other plasmid-encoded genes for early enzymes of the p-cresol
degradative pathway in Pseudomonas putida NCIMB 9866 and 9869.";
DNA Seq. 10:7-17(1999).
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PROSITE; PS00070; ALDEHYDE_DEHYDR_GLU;
PROSITE; PS00687; ALDEHYDE_DEHYDR_GLU;
Oxidoreductase; Plasmid.
SEQUENCE 491 AA; 53156 MW; 70C45CE;
                                       Pfam; PF004UD; LAGUE PFORTIN.
PRINTS; PR004U2; TRANSFERRIN.
SMART; SM00094; TR FER; 2.
PROSITE; PS00205; TRANSFERRIN_1; 1.
PROSITE; PS00206; TRANSFERRIN_2; 2.
PROSITE; PS00207; TRANSFERRIN_3; 2.
PROSITE; PS00207; TRANSFERRIN_3; 2.
PROSITE; PS00207; TRANSFERRIN_3; 2.
                                                                                                                                                                                                                                                                                                                                          88888
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    the RIKEN Genome Exploration Research "Analysis of the mouse transcriptome k 60,770 full-length cDNAs.";
Nature 420:563-573(2002).
BMBL, AK036491; BAC29450.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE FROM N.A.
STRAIN=C57BL/6J; TISSUE=Bone;
MEDLINE=22354683; PubMed=12466851;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Eukaryota; Metazoa; Chordata; Mammalia; Eutheria; Rodentia;
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Mutazoa, Chordata;
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01-OCT-2003
                                                                                                                                                                                                                                                                                                  GO; GO:0006879; P:iron ion homeostasi
GO; GO:0006826; P:iron ion transport;
InterPro; IPR001156; Transferrin.
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                                                                                                                                                                                                                                                                                                                                                 homeostasis; IE
transport; IEA.
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Pred. No.
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meostasis; IEA.
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Complete
SEQUENCE
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01-DEC-2001
01-DEC-2001
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MEDLINE=21477403; PubMed=11572948;
Omura S., Ikeda H., Ishikawa J., Hanamoto A., Takahashi C., Shinose M., Takahashi Y., Horikawa H., Nakazawa H., Osonoe T. Kikuchi H., Shiba T., Sakaki Y., Hattori M.;
"Genome sequence of an industrial microorganism Streptomyces avermitilis: deducing the ability of producing secondary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       01-JUN-2003 (TrEMBLrel. 24, Last se 01-OCT-2003 (TrEMBLrel. 25, Last ar Putative short-chain dehydrogenase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    "Complete genome sequence and comparative microorganism Streptomyces avermitilis."; Nat. Biotechnol. 21:526-531(2003).

EMBL, APO05035; BAC71127.1; GO; GO:0016491; F:oxidoreductase activity; GO; GO:0008152; P:metabolism; IEA.
                    oi-DEC-2001 (TrEMBLrel. 19, Created)
01-DEC-2001 (TrEMBLrel. 22, Last sequence update)
01-OCT-2002 (TrEMBLrel. 22, Last sequence update)
01-OCT-2002 (TrEMBLrel. 22, Last annotation update)
B1148D12.15 protein (P0454H12.9 protein).
B1148D12.15 OR P0454H12.9.
B1148D12.15 OR P0454H12.9.
Coryza sativa (Rice).
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; Liliopsida; Poales; Poaceae;
Spermatroideae; Oryzeae; Oryza.
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Pfam; PF00106; adh_short; 1.
PROSITE; PS00061; ADH_SHORT; 1.
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STRAIN=MA-4680 / A
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Last sequence update)
Last annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 41; DB Pred. No. 34; 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0
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RESULT 12
Q89C1
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AC Q89C1
AC Q89C1
DT 01-JU
DT 01-OC
DE Trans
GN BLR79
OS Brady
OC Brady
OX NCBI
RP SEQUE
RC STRAI
RA Kanek
RA Sasam
RA Kanek
RA Sasam
RA Kohar
RA Tabat
RT "Comp)
RT Brady
OX OCBI
RA GO; G
DR Inter
DR GO; G
DR Inter
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PRINC
 RESULT 13
Q866X7
ID Q8662
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Matches 7
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Best Local S
Matches 8
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SEQUENCE FROM N.A.

STRAIN=USDA 110;

STRAIN=USDA 110;

MEDLINE=22484998; PubMed=12597275;

MEDLINE=22484998; PubMed=12597275;

Kaneko T., Nakamura Y., Sato S., Minamisawa K., Uchiumi T.,

Kanaeko T., Nakamura Y., Idesawa K., Iriguchi M., Kawashima K.,

Sasamoto S., Watanabe A., Idesawa K., Iriguchi M., Kawashima K.,

Sasamoto S., Watanabe S., Tsuruoka H., Wada T., Yamada
                                                                                                                                                                        Complete
SEQUENCE
  Q866X7
                                                                                                                                                                                                                                 "Complete genomic sequence of nitrogen-fixing symbiotic Bradyrhizobium japonicum USDA110.";
DNA Res. 9:189-197(2002).
EMBL; AP005964; BAC53249.1; -.
GO; GO:0003700; F:transcription factor activity; IEA.
GO; GO:0006355; F:regulation of transcription, DNA-depen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          01-JUN-2003 (TrEMBLrel. 24, Created)
01-JUN-2003 (TrEMBLrel. 24, Last sequence update)
01-JUN-2003 (TrEMBLrel. 25, Last annotation update)
Transcriptional regulatory protein.
BLR7984.
                                                                                                                                                                                                                                                                                                                                                                                                                             Bradyrhizobium japonicum.
Bacteria; Proteobacteria; Alphaproteobacteria; Rhizobiales;
Bradyrhizobiaceae; Bradyrhizobium.
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                                                                                                                                                                                              PRINTS; PR00455; HTHTETR.
                                                                                                                                                                                                        interPro; IPR001647; HTH TetR.
Pfam; PF00440; tetR; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                      NCBI_TaxID=375
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STRAIN-cv. Nipponbare;
Sasaki T., Matsumoto T., Yamamoto K.;
"Oryza sativa nipponbare(GA3) genomic
clone:P0454H12.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STRAIN-cv. Nipponbare;
Sasaki T., Matsumoto T., Yamamoto K.;
"Oryza sativa nipponbare(GA3) genomic
rlone:#1148D12.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Submitted (FEB-2001) to the
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SEQUENCE FROM N.A.
                                                                    147
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                                                                                                                   Similarity 7; Conserv
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8; Conserv
                                                                                                                                                                        proteome.
187 AA;
                                                                                         RRARVVWAAVG 12
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                                                                 RRARAIFAAIG 157
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nilarity 66.7%;
Conservative (
                                                                                                                   Conservative
  PRELIMINARY;
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                                                                                                                                                                     20135 MW;
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                                                                                                                              66.7%;
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                                                                                                                              Score 40;
Pred. No.
PRT;
                                                                                                                                                                     B60CF364F900A222
                                                                                                                  ed. No. 38;
Mismatches
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328
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                                                                                                                                                                                                                                activity; IEA.
ription, DNA-dependent;
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                                                                                                                1,
                                                                                                                                       Length 187;
                                                                                                                                                                     CRC64;
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RESULT 14
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Best Local S
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                                                                                                                              Query Match
Best Local (
                                                                                                                                                                                        SEQUENCE FROM N.A.

SEQUENCE FROM N.A.

STRAIN-AF2122/97;

MEDLINE-22709107; PubMed=12788972;

Garrier T., Eiglmeier K., Camus J.-C., Medina N., Mansoor H.,

Pryor M., Duthoy S., Grondin S., Lacroix C., Monsempe C., Simon S.,

Harris B., Atkin R., Doggett J., Mayes R., Keating L., Wheeler P.R.,

Parkhill J., Barrell B.G., Cole S.T., Gordon S.V., Hewinson R.G.;

"The complete genome sequence of Mycobacterium bovis.";

Proc. Natl. Acad. Sci. U.S.A. 100:7877-7882(2003).

EMBL; BX248335; CAD93198.1; -.

Oxidoreductase; Complete proteome.

Oxidoreductase; Complete proteome.

SEQUENCE 449 AA; 50036 MW; F68D71CCB18F76E4 CRC64;
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01-OCT-2003
01-OCT-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              01-OCT-2003 (TrEMBLrel. 25, Created)
01-OCT-2003 (TrEMBLrel. 25, Last sequence update)
01-OCT-2003 (TrEMBLrel. 25, Last annotation update)
Possible cytochrome P450 135A1 (XP135A1 (EC 1.14.-).
CYP135A1 OR MB0334C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Bacteria; Actinobacteria; Actinobacteridae; Actinomycetales; Corynebacterineae; Mycobacteriaceae; Mycobacterium.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EMBL; AY075023; AAL78171.1; ...
GO; GO:0004089; F:carbomate dehydratase activity; IEA.
GO; GO:0008270; F:zinc ion binding; IEA.
GO; GO:0008730; P:one-carbon compound metabolism; IEA.
InterPro; IPR001148; Euk COanhd.
Pfam; PF00194; carb_anhydrase; 1.
ProDom; PD000865; Euk COanhd; 1.
SEQUENCE 328 AA; 35144 MW; 29C7249B693D5006 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Mycobacterium bovis.
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01-JUN-2003 (TrEMBLrel. 24, Created)
01-JUN-2003 (TrEMBLrel. 24, Last sequence update)
01-JUN-2003 (TrEMBLrel. 25, Last annotation update)
Carbonic anhydrase-related XI protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NCBI_TaxID=1765;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (CAR) genes.";
Submitted (JAN-2002) to the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovoidea; Bovidae; Bos.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A. Chen Y., Huang C.~H.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NCBI_TaxID=9913;
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285
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                                                                                                       Similarity 7; Conserv
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8; Conserv
                                                 RARVVWAAVG 12
OSQVVWAAVG
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294
                                                                                                                              66.7%;
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66.7%;
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Pred. No. 89;
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89;
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RESULT Q98923 ID Q9

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Q98923

PRELIMINARY;

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(CSTRAIN=H.B190v+; TISSUE=Thymus;

(CSTRAIN=H.B190v+; TISSUE=Thymus;

(CSTRAIN=H.B190v+; TISSUE=Thymus;

(CSTRAIN=H.B190v+; TISSUE=Thymus;

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(CSTRAIN=H.B190v+; TISSUE=Thymus;

(MEDLINE=9713433; PubMed=8978830;

(MEDLINE=9713433; PubMed=8978830;

(THEMCAM, an adhesion molecule expressed by c-kit+ progenitors.";

(TITUTE THEMCAM, an adhesion molecule expressed by c-kit+ progenitors.";

(TIMEMCAM, an adhesion molecule expressed
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match 66.7%; Score 40; DB 13; Length 504; Best Local Similarity 63.6%; Pred. No. 1e+02; Matches 7; Conservative 2; Mismatches 2; Indels
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01-FEB-1997 (TrEMBLrel. 02, Created)
01-FEB-1997 (TrEMBLrel. 02, Last sequence update)
01-OCT-2003 (TrEMBLrel. 25, Last annotation update)
HEMCAM precursor.
Gallus gallus (Chicken).
Gallus gallus (Chicken).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Eukaryota; Metazoa; Chordata; Galliformes; Phasianidae; Phasianinae;
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SEQUENCE
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487 RAGRVLWAALG 497
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36 504 F
504 AA; 55540 MW;
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Minimum DB
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1: geneseqp1980s:*
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Listing first
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geneseqp2002s:*
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

Result	Score	% Query Match	Length	DB	ID .	Description
	50	0	10	N	AAW93872	3872 Bi
N	41	82.0	086	4	202	2027 Rec
ω	ø	9	687	N	AAW71183	1183
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φ	9	9	689	4	790	77909
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20	9	9	708	N	42	r22424
N H	9	φ.	708	N	5	31153
22	9	9	709	N	8	r12583
23	9	9	709	N	19	5198
24	9	.9	709	N	AAR45199	r45199
25	9	79.0	709	J	PAROLEGE	267

This invention describes milk-derived bifidogenic peptides and their active derivatives or fragments, and combinations of them produced by chemical coupling. Such are produced from bovine or human milk by treatment for 2 hr with proteases, then centrifuging to remove fat and acidifying to pH 2 to precipitate proteins. The solution phase is then subjected to reverse-phase high-performance liquid chromatography (HPLC) and cation-exchange HPLC, the fractions adjusted to salt content below 25 mm (hr divisions to the content below 25 mm (hr divisions to the content below 25 mm (hr divisions to the content below 25 mm).

Claim 2; Page 3; 25pp; German.

Milk-derived peptides that stimulate Bifidobacterium bifidus

WPI; 1999-244022/20.

Forssmann W,

Zucht H,

Liepke Ç

mM (by dialysis or reverse-phase HPLC) and tested for activity by growing Bifidobacterium bifidus and Escherichia coli in presence of the fractions. Those fractions for which (Bw-B0)-(Ew-E0) is at least 0.15 are

45	44	43	42	41	40	39	38	37	36	ω σ	34	ω ω	32	31	30	29	28	27	σ
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σ	4	7	4.	4.	4	w	w	ω	N	N	N	N	N	N	7	4	w	ω	N
ABM61310	AAU64791	ADE76661	AAG64828	AAE02341	AAB36843	AAB08182	AAB03831	AAY77578	AAW86021	AAW53880	AAW57317	AAW09342	AAR43653	AAR08033	ADE76659	AAB36842	AAB03830	AAY77577	AAW53879
Abm61310	Aau64791	Ade76661	Aag64828	Aae02341	Aab36843	Aab08182	Aab03831	Aay77578	Aaw86021	Aaw53880	Aaw57317	Aaw09342	Aar43653	Aar08033	Ade76659	Aab36842	Aab03830	Aay77577	Aaw53879
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ALIGNMENTS

RESULT 1 AAW93872 ID AAW9

AAW93872 standard; peptide; 10

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bacteria; fungi; yeast; protozoa; virus; mycoplasma; filaria; plasmodia; infection; inflammation; microbial induced tumour; degenerative disorder; diarrhoea; colic; oral microflora; intestinal microflora; caries;
                                                                                                                                                                                                                                                                                                               Bifidobacterium bifidus stimulating peptide 8.
                                                                                                                                                                        16-SEP-1997;
11-FEB-1998;
                                                                                                                                                                                                                 25-MAR-1999.
                                                                                                                                                                                                                                                 Bifidobacterium bifidum.
                                                                                                                                                                                                                                                                 vaginal microflora.
                                                                                                                                                                                                                                                                                               Bifidogenic peptide; protease; treatment; microbe-related disease;
                                                                                                                                                                                                                                                                                                                                                            AAW93872;
                                                                                                                                                        (FORS/) FORSSMANN W.
                                                                                                                                                                                                16-SEP-1998;
                                                                                                                                                                                                                                 WO9914231-A2
                                                                                                                                                                                                                                                                                                                                  27-AUG-2003
25-JUN-1999
                                                                                                                                                                                                                                                                                                                                  (revised)
(first entry)
                                                                                                                                                                       97DE-01040604.
98DE-01005385.
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ARSCULT 2
AAB62027
ID AAB6
XX NCM;
KW MCM;
KW McM;
KW Meli
XX NO20
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The invention provides a composition (A) for enhancing nucleic acid polymerase reactions that comprises an archaeal MCM (minichromosome maintenance protein) and at least one of the archaeal polypeptides (PCNA, RFC-P38 or -P55, RFA, CDC6, FEN-1, dUTPase, ligase, helicase dna2, or helicases 2-8). (A) And similar compositions containing different combinations of accessory proteins, are used to improve performance of synthesis, amplification, mutagenizing, labeling and detecting reactions, e.g. for gene characterization, cloning, detection of allelic variants, diagnosis and screening for disease, particularly where done by polymerase chain reaction (PCR). Some of the proteins also stabilize duplexes during polymerase reactions or improve exonuclease reactions, for example RFA also improves specificity of nucleic acid/protein interaction and PCNA improves polymerase-mediated repair processes and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               selected where Bw = germ count after 16 hr culture of B. bifidus in 50% Elliker broth containing peptide at 0.2 mg/ml, B0 = germ count under similar conditions in a peptide-free control, Ew = germ count after 16 hr culture of E. coli in 3 g/l tryptic broth containing peptide at 0.2 mg/ml, E0 = germ count under similar conditions in a peptide-free control. The peptides AAW93865-W93888 are used to treat microbe-related diseases caused by bacteria, fungi, yeast, protozoa, viruses, mycoplasma, filaria and plasmodia, e.g. infections, inflammation, microbially induced tumours or degenerative disorders, diarrhoea, colic, abnormalities in oral, intestinal or vaginal microflora, or caries. (Updated on 27-AUG-2003 to correct OS field.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Claim 182; Fig 31; 147pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Composition for improving nucleic acid polymerase reactions, useful e.g. in synthesis or amplification, contains at least one archaeal accessory
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WPI;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MCM; minichromosome maintenance protein; archaeal polypeptide; PCNA; RFC-P38; RFC-P35, RFA; CDC6; FEN-1; dUTPase; ligase; helicase dna2; PCR; helicase 4; nucleic acid amplification; polymerase chain reaction.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (STRA-) STRATAGENE
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Best Local
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                         AAW71180-83 represent N-terminally truncated human lactoferrin proteins. The lactoferrin variants bind heparin with lower affinity than natural lactoferrin. The lactoferrin variante exhibit biological activities such as anti-inflammatory, anti-viral and anti-infective activities such as anti-inflammatory, anti-viral and anti-infective activities as well as a pro- and anti-coagulant effects, modulation of complement activation, inhibition of Insectivation of metarophils, inhibition of myelopoiesis, regulation of transcription, growth promotion of intestinal epithelial cells, inhibition of hydroxyl-radical formation, and a role in intestinal iron uptake and excretion. note: this sequence does not appear in the specification; it was created uing information provided
                                                                                                                                                                                                                                                             rheumatoid arthritis.
                                                                                                                                                                                                                                                                                  Compositions containing human lactoferrin and variants - are used for treating e.g. anaemia, iron-storage disease, inflammation, tumours,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 hybridization reactions. Nucleic acids encoding the archaeal polypeptides are used for recombinant production of proteins, and fragments of the nucleic acid as probes and primers for screening related sequences. The accessory proteins increase accuracy and efficiency of polymerase reactions, allow use of lower denaturation and extension temperatures (possibly isothermal processing), and improve synthesis of long targets. The present sequence represents a P. furiosus recombinant helicase 4
                                                                                                                                                                                                                            Claim 2; Page; 70pp; English.
                                                                                                                                                                                                                                                                                                                                         WPI; 1998-437164/37.
                                                                                                                                                                                                                                                                                                                                                                         Nuijens J,
                                                                                                                                                                                                                                                                                                                                                                                                                                                 03-FEB-1997;
02-FEB-1998;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Human; lactoferrin protein; variant; anti-inflammatory; anti-viral; anti-infective; coagulant; complement activation; inhibition; LPS mediated activation; myelopoiesis; growth promotion; intestinal epithelial cell; hydroxyl-radical formation; intestinal iron uptake; excretion.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mutant human lactoferrin protein designated hLF-5N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAW71183 standard; protein;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                                                               arthritis, ulcerative colitis or infections
                                                                                                                                                                                                                                                                                                                                                                           Van Berkel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               82.0%;
                                                                                                                                                                                                                                                                                                                                                                           PHC;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   687
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Pred. No.
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52;
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Query Match

Score 39.5;

В 2

Length 687

Sequence 687

AA;

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                                                   Query Match
Best Local S
Matches 10
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                                                                                                                          The sequence represents the human lactoferrin (hLF) protein variant hLF-SN. The invention relates to novel methods of treatment using high doses of lactoferrin. The methods of the invention are useful for the treatment or prophylaxis of infectious disease, inflammatory diseases and excess of heparin e.g. gastroenteritis, inflammatory bowel disease, sepsis, anaemia, myelopoieses, reducing reperfusion injury, cytokine release and proteoglycan-mediated entry of virus into cells. The advantage of the method is that the patient is substantially free of side effect responses to administration of lactoferrin. Therefore large doses of lactoferrin can be administered. Note: The present sequence is not shown in the specification but is derived from human wild-type lactoferrin sequence given in the sequence listing of the specification
                                                                                                       Sequence 687 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Human; lactoferrin; hLF; infectious disease; inflammatory disease; excess of heparin; gastroenteritis; inflammatory bowel disease; sepsis; anaemia; myelopoiese; reperfusion injury; cytokine release; proteoglycan; hLF-5N; mutant; mutein.
                                                                                                                                                                                                                                                                                                        Claim 10; Page; 49pp; English.
                                                                                                                                                                                                                                                                                                                                Use of lactoferrin for treatment diseases and excess of heparin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                        27-MAR-2000; 2000EP-00201110.
27-MAR-2000; 2000US-0193352P.
                                                                                                                                                                                                                                                                                                                                                                           WPI; 2001-648424/74.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               27-MAR-2001; 2001WO-NL000253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WO200172322-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Human lactoferrin variant hLF-5N.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        22-JAN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                              (PHAR-) PHARMING INTELLECTUAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAG77911 standard; protein; 687
 333
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                         1 EVAA-RARVVW 10
                                                    10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Similarity 90.
                                                                  Similarity
                                                                                                                                                                                                                                                                                                                                                                                                     JBMM,
EVAARRARVVW 343
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                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                   Nuijens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Location/Qualifiers 23. .26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /label= Cationic_domain
                                                               79.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              90.9%;
                                                 Score 39.5; D
Pred. No. 69;
0; Mismatches
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                                                                                                                                                                                                                                                                                                                                                                                                                              PROPERTY BV
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                                                                                                                                                                                                                                                                                                                                               of infectious diseases, inflammatory
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            69;
                                                                           DB 4;
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                                                                           Length 687;
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RESULT 5
AAW71182
ID AAW7
XX AAW7
XX AAW7
XX AAW7
XX AAW7
XX Muta
XX Muta
XX Huma
KW Inte
XX Synt
XX Inte
XX Synt
OS Homo
PN WO98
XX Nuij
XX O3-F
PR 02-F
PR 10-F
PR 10-F
PR 02-F
PR 0
RESULT 6
AAG77910
ID AAG7
XX
AC AAG7
XX
AC AAG7
XX
AC Huma
XX
DE Huma
XX
Huma
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Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAW71180-83 represent N-terminally truncated human lactoferrin proteins. The lactoferrin variants bind heparin with lower affinity than natural lactoferrin. The lactoferrin variants exhibit biological activities such as anti-inflammatory, anti-viral and anti-infective activities as well as a pro- and anti-coagulant effects, modulation of complement activation, inhibition of LPS mediated activation of neutrophils, inhibition of myelopoiesis, regulation of transcription, growth promotion of intestinal epithelial cells, inhibition of hydroxyl-radical formation, and a role in intestinal iron uptake and excretion. note: this sequence does not appear in the specification; it was created uing information provided
                                                  Human lactoferrin variant hLF-4N.
                                                                                                                                                                                                                              AAG77910 standard; protein; 688 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Compositions containing human lactoferrin and variants - a treating e.g. anaemia, iron-storage disease, inflammation, rheumatoid arthritis, ulcerative colitis or infections.
                                                                                                                   22-JAN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 688 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Claim 2; Page; 70pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WPI; 1998-437164/37.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 03-FEB-1997;
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anti-infective; coagulant; complement activation; inhibition;
LPS mediated activation; myelopoiesis; growth promotion;
intestinal epithelial cell; hydroxyl-radical formation;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WO9833509-A2
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mutant human lactoferrin protein designated hLF-4N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    27-OCT-1998
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Homo sapiens.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          intestinal iron uptake; excretion.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (PHAR-) PHARMING BV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1 Similarity
10; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                         1 EVAA-RARVVW 10
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                                                                                                          (first entry)
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98US-00017043.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             79.0%;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 39.5;
Pred. No. 69;
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infectious

disease;

inflammatory disease;

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RESULT 7
AAW71181
ID AAW
XX AAW
XX AAW
XX AW
XX AW
XX AW
XX INT
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Best Local
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                4N. The invention relates to move and are useful to the flactoferrin. The methods of the invention are useful to the flactoferrin. The methods of the invention are useful to the prophylaxis of infectious diseases, inflammatory diseases, sepsis, of heparin e.g. gastroenteritis, inflammatory bowel disease, sepsis, anaemia, myelopoises, reducing reperfusion injury, cytokine release and proteoglycan-mediated entry of virus into cells. The advantage of the method is that the patient is substantially free of side effect responses to administration of lactoferrin. Therefore large doses of lactoferrin can be administered. Note: The present sequence is not shown in the specification but is derived from human wild-type lactoferrin sequence given in the sequence listing of the specification
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                The sequence represents the human lactoferrin (hLF) protein variant 4N. The invention relates to novel methods of treatment using high of lactoferrin. The methods of the invention are useful for the tree
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Use
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   27-MAR-2000;
27-MAR-2000;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              excess of heparin; gastroenteritis; inflammatory bowel disease; sepsis; anaemia; myelopoiese; reperfusion injury; cytokine release; proteoglycan;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Claim 10;
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                                                                                                                                                                                         Human; lactoferrin protein; variant; anti-inflammatory; anti-viral; anti-infective; coagulant; complement activation; inhibition;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 688 AA;
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                               Homo
                                                                                                               intestinal iron
                                                                                                                                   LPS mediated activation; myelopoiesis; growth promotion intestinal epithelial cell; hydroxyl-radical formation;
                                                                                                                                                                                                                                                                         Mutant human
                                                                                                                                                                                                                                                                                                                                27-OCT-1998
                                                                                                                                                                                                                                                                                                                                                                                   AAW71181;
                                                                                                                                                                                                                                                                                                                                                                                                                                    AAW71181 standard; protein; 689
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   of lactoferrin 1
eases and excess
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                            sapiens
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10; Conserv
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EVAA-RARVVW 10
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
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2000US-0193352P.
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                                                                                                                                                                                                                                                                      lactoferrin protein designated hLF-3N
                                                                                                                                                                                                                                                                                                                                (first
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24. .27
/label= Cationic_domain
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                                                                                                               uptake; excretion.
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                                                                                                                                                                                                                                                                                                                                entry)
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Pred. No. 69;
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                                                                                                                                                                     promotion;
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RESULT 8
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Matches 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAW71180-83 represent N-terminally truncated human lactoferrin proteins. The lactoferrin variants bind heparin with lower affinity than natural lactoferrin. The lactoferrin variants exhibit biological activities such as anti-inflammatory, anti-viral and anti-infective activities as well as a pro- and anti-coagulant effects, modulation of complement activation, inhibition of LPS mediated activation of neutrophils, inhibition of myelopoiesis, regulation of transcription, growth promotion of intestinal epithelial cells, inhibition of hydroxyl-radical formation, and a role in intestinal iron uptake and excretion. note: this sequence does not appear in the specification; it was created uing information provided
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Compositions containing human lactoferrin and variants - a treating e.g. anaemia, iron-storage disease, inflammation, rheumatoid arthritis, ulcerative colitis or infections.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            03-FEB-1997;
02-FEB-1998;
                                                                                                                                                                                                             Human; lactoferrin; hLF; infectious disease; inflammatory disease; excess of heparin; gastroenteritis; inflammatory bowel disease; sepsis; anaemia; myelopoiese; reperfusion injury; cytokine release; proteoglyca
                                                                                                                                                                                                                                                                Human lactoferrin variant hLF-3N.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 689
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Claim 2; Page; 70pp;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (PHAR-) PHARMING BV
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            27-MAR-2000;
27-MAR-2000;
                                                                                                                                                  кеу
                                                                                                                                                                           Homo
                                                27-MAR-2001;
                                                                                                                                       Domain
                                                                                                WO200172322-A2
                                                                                                                                                                           sapiens
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10; Conserv
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          2000EP-00201110
2000US-0193352P
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                                                                                                                                                                                                                                                                                          (first entry)
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98US-00017043.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Berkel
                                                                                                                                                                                                     hLF-3N; mutant; mutein
                                                                                                                        Location/Qualifiers
25. .28
/label= Cationic_domain
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                                                                                                                                                                                                                                                                                                                                             689
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Pred. No. 69;
0; Mismatches
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                                                                                                                                                                                                                  release; proteoglycan;
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Matches 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     or prophylaxis of infectious diseases, inflammatory diseases and excess of heparin e.g. gastroenteritis, inflammatory bowel disease, sepsis, anaemia, myelopoieses, reducing reperfusion injury, cytokine release and proteoglycan-mediated entry of virus into cells. The advantage of the method is that the patient is substantially free of side effect responses to administration of lactoferrin. Therefore large doses of lactoferrin can be administered. Note: The present sequence is not shown in the specification but is derived from human wild-type lactoferrin sequence given in the sequence listing of the specification
                      Compositions containing human lactoferrin and variants - are used for treating e.g. anaemia, iron-storage disease, inflammation, tumours,
                                                                                                                                                03-FEB-1997;
02-FEB-1998;
                                                                                                                                                                                                                                                                                                                     Human; lactoferrin protein; variant; anti-inflammatory; anti-viral; anti-infective; coagulant; complement activation; inhibition; IFS mediated activation; myelopoiesis; growth promotion; intestinal epithelial cell; hydroxyl-radical formation;
           treating e.g. anaemia, iron-store rheumatoid arthritis, ulcerative
                                                                   WPI; 1998-437164/37.
                                                                                                                                                                                       02-FEB-1998;
                                                                                                                                                                                                                   06-AUG-1998
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAW71180 standard; protein;
                                                                                                                       (PHAR-)
                                                                                                                                                                                                                                                                    Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Claim 10; Page; 49pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Use of lactoferrin for treatment of diseases and excess of heparin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Van
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            335
                                                                                                                                                                                                                                                                                                                                                                                        human lactoferrin protein designated hLF-2N
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                                                                                                                      PHARMING
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EVAARRARVVW 345
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    689 AA;
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                                                                                           Van Berkel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
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                                                                                                                                              97US-0036859P
98US-00017043
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                                                                                                                                                                                                                                                                                                           uptake; excretion
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            79.0%;
90.9%;
         iron-storage disease, inflammati
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Pred. No. 69;
0; Mismatches
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The sequence represents the human lactoferrin (hLF) protein variant hLF-2N. The invention relates to novel methods of treatment using high doses of lactoferrin. The methods of the invention are useful for the treatment or prophylaxis of infectious diseases, inflammatory diseases and excess of heparin e.g. gastroenteritis, inflammatory bowel disease, sepsis, anaemia, myelopoieses, reducing reperfusion injury, cytokine release and proteoglycan-mediated entry of virus into cells. The advantage of the method is that the patient is substantially free of side effect responses
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAW71180-83 represent N-terminally truncated human lactoferrin proteins. The lactoferrin variants bind heparin with lower affinity than natural lactoferrin. The lactoferrin variants exhibit biological activities such as anti-inflammatory, anti-viral and anti-infective activities as well as a pro- and anti-coagulant effects, modulation of complement activation, and anti-coagulant effects, modulation of complement activation, inhibition of LPS mediated activation of neutrophils, inhibition of transcription, growth promotion of intestinal epithelial cells, inhibition of hydroxyl-radical formation, and a role in intestinal iron uptake and excretion. note: this sequence does not appear in the specification; it was created uing information provided
                                                                                                                                                                           Use of lactoferrin for treatment of infectious diseases, diseases and excess of heparin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Human; lactoferrin; hLF; infectious disease; inflammatory disease; excess of heparin; gastroenteritis; inflammatory bowel disease; se anaemia; myelopoiesis; reperfusion injury; cytokine release; proteoglycan; hLF-2N; mutant; mutein.
                                                                                                                                                  Claim 10;
                                                                                                                                                                                                                                                                                                                            27-MAR-2000;
27-MAR-2000;
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                                                                                                                                                                                                                                2001-648424/74.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   lactoferrin variant hLF-2N.
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                                                                                                                                              Page; 49pp;
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                                                                                                                                                                                                                                                                                                                            2000EP-00201110.
2000US-0193352P.
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Pred. No. 69;
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The invention describes a method of producing a heterologous polypeptide (I) in a grain of a plant, comprising culturing a transformed plant (P1) CC comprising a first chimeric gene, and optionally, at least one heterologous transcription factor that is capable of enhancing the CC expression of the chimeric gene, to form a grain producing transforming CC plant (P2), and recovering transgenic grains containing (I) from P2. The CC method is useful for producing heterologous polypeptide in a grain of a CC plant. (I) is a non-plant storage, human or non-human animal, milk or CC chemokines, hormones, growth factors, coagulation factors, anti-cc cinfectives, or cytotoxins, or anti-inflammatory molecule or intestinal trefoil factor (ITF) or its active fragment. Preferably, (I) is classified in the coagulation factors and complete compl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            14-FEB-2001;
14-FEB-2001;
02-MAY-2001;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    producing heterologous polypeptide in plant grain, by culturing transformed plant to form a grain-producing transforming plant, and recovering transgenic grains containing polypeptide from transformed
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          14-FEB-2002; 2002WO-US004909
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2001US-0269199P.
2001US-00847232.
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Pred. No. 69;
0; Mismatches
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Query Match
Best Local S
Matches 10
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Best Local
                                                                                 one or more plant-derived feed ingredients, substantially unsupplemented with small-molecule antibiotics and as an additive a seed composition containing a flour, extract or malt obtained from mature monocot seeds and one or more heterologous seed-produced anti-microbial proteins in substantially unpurified form. The invention is useful as a feed for production animals such as poultry and hoofed farm animals. The present sequence is human codon optimised lactoferrin. This sequence is used in
                                                                                                                                                                                                                                                                                   WPI; 2002-682708/73.
N-PSDB; AAD45297.
                                                                                                                                                                                                                                                                                                                                                                        14-FEB-2001; 2001US-0269188P
02-MAY-2001; 2001US-00847232
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Human; feed improvement; plant-derived feed; antibiotic; additive;
anti-microbial; poultry; lactoferrin; flour; malt.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAE27884;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        producing a transgenic plant
                                                                                                                                                                                                                                   Improved feed for production animals, comprising plant-derived feed ingredients, and seed composition containing flour, extract, or malt mature monocot seeds and heterologous seed-produced anti-microbial
                                                                                                                                                                                                                                                                                                                                                                                                              14-FEB-2002;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAE27884 standard; protein;
                                               Sequence 690 AA;
                                                                                                                                                                                                                          proteins.
                                                                        sequence is human the invention
                                                                                                                                                         The invention relates to improved feed for production animals, comprising one or more plant-derived feed ingredients, substantially unsupplemented
                                                                                                                                                                                                Example 7; Page 148-150;
                                                                                                                                                                                                                                                                                                                                                  (VENT-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   336
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          Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              optimised lactoferrin.
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              79.0%;
90.9%;
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Pred. No. 69;
O; Mismatches
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  Score 39.5; I
Pred. No. 69;
0; Mismatches
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                          Length 690;
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RESULT 14
AAB97382
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Best Local S
Matches 10
   inflammatory response; cytokine production reduction; neutrophil degranulation; myelopoiesis inhibition.
                         Human; lactoferrin; hLF; N-terminal; antimicrobial; heparin;
                                                                         17-AUG-2001
                                                                                                                                                                                                                                                                                    The present sequence is that of human lactoferrin. The invention relates to a synthetic gene (see ARZ58122) that encodes human lactoferrin but which has codon usage designed to maximise expression in plants. Transgenic plants that express human lactoferrin in a tissue-specific manner, especially in the seeds, can be used in processes for the production of functional vegetal milk, fruit juices, fruit and/or vegetable homogenized foods (claimed). The transgenic plants are selected from solanaceae, cereals, leguminosae, fruit bearing plants and horticultural plants, especially soybean, tobacco and rice
                                                   Human
                                                                                                 AAB97382;
                                                                                                                      AAB97382 standard;
                                                                                                                                                                                                                                                                      Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                           Synthetic polynucleotide encoding human lactoferrin, used for of functional foods, vegetal milks and human lactoferrin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   N-PSDB; AAZ58122.
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                                                                                                                                                                               338
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                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                             EVAARRARVVW 348
                                                                                                                                                                                                  EVAA-RARVVW 10
                                                                                                                                                                                                                                                                      692 AA;
                                                                                                                                                                                                                         Conservative
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                                                                        (first
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                                                   (hLF).
                                                                                                                      protein;
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Pred. No. 6
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RESULT 15
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Matches 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 This invention relates to fragments (between 6 and 26 amino acids) of the human lactoferrin hLF protein (represented by the present sequence). Neterminal hLF peptides have antimicrobial activity. The peptides of the invention are used to treat microbial infections, especially infections by gram positive or negative bacteria, particularly Listeria, Staphylococcus, Klebsiella or Escherichia species, especially L. monocytogenes, S. aureus and E. coli. Other uses include reducing thinlammatory response by neutralising heparin or lipopolysaccharide or by reducing cytokine production and neutrophil degranulation, inhibiting entry of viruses such as cytomegalovirus, herpes simplex virus 1 or HIV into cells, inhibiting myelopoiesis and reducing production of GM-CSF (granulocyte/macrophage colony stimulating factor)
                                                                                                     Human; lactoferrin; hLF; infectious disease; inflammatory disease; excess of heparin; gastroenteritis; inflammatory bowel disease; se anaemia; myelopoiesis; reperfusion injury; cytokine release;
                                                                                                                                                                                                                                                                               18-JAN-2002
                                                                                                                                                                                                                                                                                                                                                                                          AAG77906
                                                                                                                                                                                                                      Human lactoferrin.
                                                                                                                                                                                                                                                                                                                                       AAG77906;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Claim 1; Page 55-57; 59pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        New polypeptides comprising the N-terminal region of human lactoferrin protein exhibit higher antimicrobial activity than the full length protein and are useful to treat bacterial infections.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WPI; 2001-335909/35.
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11-NOV-1999;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   338 EVAARRARVVW 348
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              l Similarity
10; Conserv
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99US-0164975P.
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/label= Cationic_domain
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referred to in the claims"
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Pred. No. 6
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                                                                                                                             sepsis;
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Search completed: September 1, Job time: 28.0667 secs
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                                                                                                                Query Match 79.0%;
Best Local Similarity 90.9%;
Matches 10; Conservative
                                                                                                                                                                                                 The sequence represents the human lactoferrin (hLF) protein. The methods of the invention are useful for the treatment or prophylaxis of infectious diseases, inflammatory diseases and excess of heparin e.g. gastroenteritis, inflammatory bowel disease, sepsis, anaemia, myelopoieses, reducing reperfusion injury, cytokine release and proteoglycan-mediated entry of virus into cells. The advantage of the method is that the patient is substantially free of side effect responses to administration of lactoferrin. Therefore large doses of lactoferrin can be administrated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Key
Domain
                                                                                                                                                                        Sequence 692 AA;
                                                                                                                                                                                                                                                                                                                                                 Claim 26; Page 47-49; 49pp; English.
                                                                                                                                                                                                                                                                                                                                                                           Use of lactoferrin for treatment of infectious diseases, inflammatory diseases and excess of heparin.
                                                                                                                                                                                                                                                                                                                                                                                                                        WPI; 2001-648424/74.
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Van Bree JBMM, Nuijens JH;
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27-MAR-2000; 2000US-0193352P.
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338 EVAARRARVVW 348
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                                                                                                                                            Length 692;
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Run

82

Title:

OM protein

GenCore version 5.1.6 Copyright (c) 1993 - 2004 Compugen Ltd.

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Post-processing: Minimum Match 0%
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                                                                                                      seq length: 0
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                                               1 Similarity
10; Conserv
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Result

33 66.0 426 4 US-09-657-440-8 33 66.0 769 4 US-09-657-2991A-19611 33 66.0 852 4 US-08-811-82-3 33 66.0 3546 4 US-09-679-279-13 33 66.0 3782 3 US-09-105-537-4 32 64.0 124 4 US-09-732-210-357 32 64.0 124 4 US-09-732-210-357 32 64.0 245 4 US-09-282-991A-24960 32 64.0 245 4 US-09-489-039A-12667 32 64.0 667 4 US-09-489-039A-12750 32 64.0 667 4 US-09-489-039A-12750 31.5 63.0 703 1 US-08-145-81-6 31.5 63.0 703 2 US-08-145-106-6 31.5 63.0 703 2 US-08-453-703-6 31.5 63.0 703 3 US-08-456-108-6 31.5 63.0 703 4 US-09-252-991A-32559	45	44	43	42	41	40	39	38	37	36	35	34	L)	32	31	30	29	28
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8484488448888888888888888888888888888	32559, A	, App	, Appl	, App	, Appl	6, Appli	, Appl	, Appl	2, Appli	50,	,	4	UΠ	4, Appli	13, Appl	3, Appli		8, Appli

ALIGNMENTS

Minimum Maximum

DB DB

Searched:

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; TOPOLOGY: linear; MOLECULE TYPE: protein US-08-724-586-2
                                                                                                                                                                                                                                                 COMPUTER: IBM PC COMPATIBLE
COMPUTER: IBM PC COMPATIBLE
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PATENTIN Release #1.0, Ve:
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/724,586
FILING DATE: 30-SEPT-1996
CLASSIFICATION 0ATA:
APPLICATION DATA:
APPLICATION DATA:
APPLICATION NUMBER: US 08/238,445
FILING DATE: 05-MAY-1994
ATTORNEY/AGENT INFORMATION:
NAME: Player, William E.
REGISTRATION NUMBER: 10505/P5810
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                           TELEPHONE: (202) 638-66
TELEPAX: (202) 393-5350
INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GENERAL INFORMATION:
                                                                                                      SEQUENCE CHARACTERISTICS:
LENGTH: 694 amino acids
TYPE: amino acid
TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: Kruzel, Marian L.
APPLICANT: Kurecki, Tomasz
APPLICANT: Gollnick, Paul D.
APPLICANT: Gollnick, Paul D.
APPLICANT: Doyle, Darrell J.
TITLE OF INVENTION: Cloning, Expression, and Uses of Human
TITLE OF INVENTION: Lactoferrin
NUMBER OF SEQUENCES: 8
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ADDRESSEE: Jacobson,
STREET: 400 Seventh S
CITY: Washington D.C.
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o. 6066469
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400 Seventh St. N.W.
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79.0%;
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Score 39.5;
Pred. No. 21;
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340 EVAARRARVVW 350

CITY: Washington D.C.

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US-09-421-632-2
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                                                                                                                                                                             Sequence 2, Application US/09932190
Patent No. 6455687
GENERAL INFORMATION:
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                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TELEFAX: (202) 393-5350
INFORMATION FOR SEQ ID NO: 2
SEQUENCE CHARACTERISTICS:
LENGTH: 694 amino acids
TYPE:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICATE:
FILING DATE:
ATTORNEY/AGENT INFORMATION:
ATTORNEY/BAJERT WILLIAM E.
31,409
10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NAME: Player, William 31,409
REGISTRATION NUMBER: 31,409
REFERENCE/DOCKET NUMBER: 10505/P58185C
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION 1NFORMATION:
TELECOMMUNICATION 1NFORMATION:
TELECOMMUNICATION 1NFORMATION:
TELECOMMUNICATION 1NFORMATION:
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PRIOR APPLICATION DATA:
APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MOLECULE TYPE: protein
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                STREET: 400 CC.
CITY: Washington D.C.
COUNTRY: U.S.A.
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                                                                                                                                                                                                                                                                                                                                                                                                     Local
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ADDRESSEE:
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                                                                      Gollnick, Paul D.
Doyle, Darrell J.
TITLE OF INVENTION: Cloning, Expression, and Uses of Human
Lactoferrin
                                   NUMBER OF SEQUENCES: 8
CORRESPONDENCE ADDRESS:
                                                                                                                                                             APPLICANT: Kruzel, Marian L.
                                                                                                                                                                                                                                                                                                               340 EVAARRARVVW 350
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      INFORMATION
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Similarity 90.9%;
10; Conservative
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            amino acid
ADDRESSEE: Jacobson, Price, Holman & Stern STREET: 400 Seventh St. N.W.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 E: Jacobson, Price, Holman & Stern 400 Seventh St. N.W.
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Gollnick, Paul D.
Doyle, Darrell J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Kruzel,
                                                                                                                                            Kurecki, Tomasz
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                                                                                                                                                                                                                                                                                                                                                                                       Score 39.5; Di
Pred. No. 21;
0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                        DB 3; Length 694;
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US-08-655-640-2
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Patent No.
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                                                  APPLICATION NUMBER: US/08/655,64
FILING DATE: 30-MAY-1996
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 07/992,538
FILING DATE: December 17, 1992
ATTORNEY/AGENT INFORMATION:
NAME: SCOTT, WATSON T.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: Teng, CHILDAND
APPLICANT: Panella, Timothy J.
TITLE OF INVENTION: HUMAN LACTOFERRIN
NUMBER OF SEQUENCES: 5
CORRESPONDENCE ADDRESS:
ADDRESSEE: CUSHMAN, DARBY & CUSHMAN
STREET: 1100 NEW YORK AVE. N.W., NINTH FLOOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TELEFAX: (202) 393-
INFORMATION FOR SEQ ID NO: 2:
                                                                                                                                                                                                                                                                                                                                              SOFTWARE: PatentIn Release #1.0, CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                            COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
COMPUTER: IBM PC COMPUTER: PC-DOS/MS-DOS
CHERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CLASSIFICATION: «Unknown»

PRIOR APPLICATION DATA:
APPLICATION UNMBER: US/08/724,586

PILING DATE: 30-SEPT-1996
APPLICATION UNMBER: US 08/238,445

PILING DATE: 30-SEPT-1994

PILING DATE: 30-SEPT-1994

ATTORNEY/AGENT INFORMATION:
NAME: Player, William E.
REGISTRATION NUMBER: 31,409
REFERENCE/DOCKET NUMBER: 10505/P58185C
TELECOMMUNICATION INFORMATION:
COLUMN TELECOMMUNICATION INFORMATION:
PLAYER COLUMN TO THE COLUMN TO T
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operating system: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/932,190
FILING DATE: 17-Aug-2001
FILING DATE: 17-Aug-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ZIP: 20004
COMPUTER READABLE FORM:
TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TOPOLOGY: linear MOLECULE TYPE: protein SEQUENCE DESCRIPTION: SEQ ID NO: 2:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE CHARACTERISTICS:
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40, 5948617
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Similarity 90.9%;
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TYPE: amino acid
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: 26,581
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Pred. No. 21;
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                                                                                                                                                                                                                                                                                                                                                                                            Version #1.25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DB 4;
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US-08-655-640-4
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                                                           Query Match 79.
Best Local Similarity 90.
Matches 10; Conservative
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Best Local Similarity
                                                                                                                                                                                                                                                                         FILING DATE: 30-MAY-1996
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 07/992,538
FILING DATE: December 17, 1992
ATTORNEY/AGENT INFORMATION:
NAME: SCOTT, WARSON T.
REGISTRATION NUMBER: 26,581
REFERENCE/DOCKET NUMBER: WTS/568
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION 1NFORMATION:
TELECOMMUNICATION 10803000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GENERAL INFORMATION:
APPLICANT: Teng, Christina
APPLICANT: Panella, Timothy J.
TITLE OF INVENTION: HUMAN LACTOFERRIN
NUMBER OF SEQUENCES: 5
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TELEFAX: (202) 822-0944
TELEX: 6714627 CUSH
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                          INFORMATION FOR SEQ ID NO: 4:
SEQUENCE CHARACTERISTICS:
LENGTH: 708 amino acids
                                                                                                                                                TYPE: amino acids
TYPE: amino acid
TOPOLOGY: line
(OLECUTO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                            MOLECULE TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SOFTWARE: PatentIn Release #1.0, Version #1.25 CURRENT APPLICATION DATA:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      REFERENCE/DOCKET NUMBER: WI
TELECOMMUNICATION INFORMATION:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CITY: WASHINGTON
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357 ÉVAARRARVVW 367
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    amino acid

OGY: linear
                             EVAA-RARVVW 10
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                                                                                                                                                                                                                                               6714627 CUSH
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1100 NEW YORK AVE. N.W., NINTH FLOOR
                                                                                                                                                                                                                                                                (202) 822-0944
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                                                                                                                                            protein
                                                                                                                                                                                                                                                                                                                                                                                                                                      .UMBER: US/08/655,640
30-MAY-1996
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                                                                             79.0%;
90.9%;
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                                                           Score 39.5; DI
Pred. No. 22;
0; Mismatches
                                                                                                                                                                                                                                                                                                              WTS/5683/98019/SAP
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Pred. No. 22;
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                                                                                             DB 2; Length 708;
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                                                               Indels
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COMPUTER: IBM PC COMPACTION
COMPUTER: IBM PC DOS/MS-DOS
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION NOTA:
APPLICATION NUMBER: US/08/154,019
FILING DATE: 16-NOV-1993
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/461,333
FILING DATE: 05-UN-1995
APPLICATION NUMBER: US 08/077,788
FILING DATE: 15-UN-1993
PRIOR APPLICATION NUMBER: US 08/077,788
FILING DATE: 15-UN-1993
PRIOR APPLICATION NUMBER: US 08/077,788
FILING DATE: 15-UN-1993
PRIOR APPLICATION NUMBER: US 07/895,956
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                                                                                                                                                          ; TOPOLOGY: linear
; MOLECULE TYPE: protein
US-08-154-019-2
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US-08-154-019-2
                                                                             Matches
                                                                                              Query Match
Best Local
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                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICATION NUMBER: US 07/895,956
FILING DATE: 15-UUN-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/619,131
FILING DATE: 27-NOV-1990
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/444,745
APPLICATION NUMBER: US 07/444,745
                                                                                                                                                                                                                                                                             TELEFAX: 415-543-5043
INFORMATION FOR SEQ ID NO: 2:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GENERAL INFORMATION:
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COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                STREET: Une .....
CITY: San Francisco
STATE: California
                                                                                                                                                                                                                                       SEQUENCE CHARACTERISTICS:
LENGTH: 709 amino acids
                                                                                                                                                                                                                                                                                                                                     NAME: Liebescheutz, Joe O.
REGISTRATION NUMBER: 37,505
REFERENCE/DOCKET NUMBER: 16994-003123
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CORRESPONDENCE ADDRESS:
ADDRESSEE: Townsend and Townsend and Crew
STREET: One Market Plaza, Steuart Tower, Suite 2000
                                                                                                                                                                                                                                                                                                                                                                                                                    FILING DATE: 01-DEC-1989
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RPPLICANT: Krimpenfort, Paul J.A.
TITLE OF INVENTION: Production of Recombinant Polypeptides
TITLE OF INVENTION: by Bovine Species and Transgenic Metho
NUMBER OF SEQUENCES: 38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT:
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                                                                                                                                                                                                                                                                                                                      TELEPHONE:
355
                                                                             10;
                                      1 EVAA-RARVVW 10
                                                                                                Similarity
                                                                                                                                                                                                                 amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Application US/08154019
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Heyneker, Herbert L.
                                                                             Conservative
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Pieper, Frank
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IBM PC compatible
SYSTEM: PC-DOS/MS-DOS
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                                                                                              79.0%;
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                                                                          Score 39.5; D
Pred. No. 22;
0; Mismatches
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                                                                                                                 DB 1;
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RESULT 7 US-08-461-333-2

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                                                                                                          RESULT 8
US-08-464-167-2
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 GENERAL INFORMATION:
APPLICANT: Deboer,
APPLICANT: Strijkes
APPLICANT: Heynekes
                                                                        Sequence 2, Applic Patent No. 6013857
                                                                                                                                                                                                                                                    Matches
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Best Local
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Patent No.
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INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FILING DATE: 27-NOV-1990
PRIOR APPLICATION DATA:
APPLICATION UNMBER: US 07/444,745
APPLICATION UNMBER: US 07/444,745
ATTORNEY/AGENT INFORMATION:
NAME: Liebescheutz, Joe 0.
REGISTRATION NUMBER: 37,595
REGISTRATION NUMBER: 37,595
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                                                                                                                                                                                                                                                                                                                                          TYPE: amino acids
TYPOLOGY: line
NOLECTIF
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PRIOR APPLICATION DATA:
US 08/077,788
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PRIDE AFFLICATION DATA: 15-UN-1993
PRIOR APPLICATION DATA:
PRIOR APPLICATION NUMBER: US 07/895,956
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SOFTWARE: PatentIn Release #1.0,
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/461,33:
FILING DATE: 05-JUN-1995
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MEDIUM TYPE: Floppy disk
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ADDRESSEE: Townsend and Townsend and Crew
STREET: One Market Plaza, Steuart Tower, Suite 2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TELEPHONE: 415-543-9600
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PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/619,131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: Krimpenfort, Paul J.A.
TITLE OF INVENTION: Production of Recombinant Polypeptides
TITLE OF INVENTION: by Bovine Species and Transgenic Methods
NUMBER OF SEQUENCES: 38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PPLICANT:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICATION NUMBER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COUNTRY:
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California
                                                                                       Application US/08464167
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Platenburg, Gr
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Strijker, Rein
Heyneker, Herbert
Deboer, Herman A.
Strijker, Rein
Heyneker, Herbert L.
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Pieper, Frank
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Pred. No. 22;
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US-08-464-167-2
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                                                                                                                                           Patent No. 6066725
GENERAL INFORMATION:
APPLICANT: Deboer.
                                                                                                                                                                                                 Sequence
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Best Local (
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INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
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PRIOR APPLICATION DATA:
APPLICATION UNMERR:
PRIOR APPLICATION UNMERR:
PRIOR APPLICATION DATA:
APPLICATION UNMERR:
PRIOR APPLICATION DATA:
APPLICATION UNMERR:
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APPLICATION NUMBER: US/08/464,167
FILING DATE: 05-UN-1995
CLASSIFICATION: 800
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/077,788
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FILING DATE: 27-NOV-1990
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 0'
FILING DATE: 01-DEC-1989
ATTORNEY/AGENT INFORMATION:
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CITY: San Francisco
STATE: California
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MEDIUM TYPE: Floppy disk
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TITLE OF INVENTION: Production of Recombinant Polypeptides
TITLE OF INVENTION: by Bovine Species and Transgenic Methods
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NUMBER OF SEQUENCES:
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 CITLE OF INVENTION:
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OPERATING SYSTEM:
SOFTWARE: Patenti
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                                                                                                                                                                      2, 606672
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Similarity 90.9%;
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Lee, Sang He
Pieper, Frank
Platenburg, Gerald
Lee, Sang He
Pieper, Frank
Preper, Frank
Krimpenfort, Paul J.A.
VENTION: Production of Recombinant Polypeptides
VENTION: by Bovine Species and Transgenic Methods
                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                           Deboer, Herman A.
Strijker, Rein
Heyneker, Herbert L.
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SYSTEM: PC-DOS/MS-DOS
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01-DEC-1989
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15-JUN-1992
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Plaza, Steuart Tower, Suite 2000
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RESULT 10
US-08-476-798-2
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Best Local (
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APPLICANT: Krimpenfort, Paul J.A.
APPLICANT: Krimpenfort, Paul J.A.
TITLE OF INVENTION: by Bovine Species and Transgenic Methods
TITLE OF INVENTION: by Bovine Species and Transgenic Methods
NUMBER OF SEQUENCES: 38
CORRESPONDENCE ADDRESS:
CORRESPONDENCE ADDRESS:
                                                                                                                                                                            APPLICANT:
APPLICANT:
APPLICANT:
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PRIOR APPLICATION DATA:
PRIOR APPLICATION NUMBER: US 07/895,956
PRIOR DATE: 15-JUN-1992
PRIOR APPLICATION DATA:
PRIOR APPLICATION NUMBER: US 07/619,131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICATION NUMBER: US 07/444,745
FILING DATE: 01-DEC-1989
ATTORNEY/AGENT INFORMATION:
NAME: Liebescheutz, Joe O.
REGISTRATION NUMBER: 37,505
REFERENCE/DOCKET NUMBER: 16994-00:
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICATION NUMBER: US 07
FILING DATE: 27-NOV-1990
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE CHARACTERISTICS:
LENGTH: 709 amino acid
                                                                                                                                                            APPLICANT:
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PRIOR APPLICATION DATA:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LENGTH: 709 amino acids
TYPE: amino acid
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                                                                                                                                                                                                                                                                                                                                                               355 EVAARRARVVW 365
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ISEE: Townsend and Townsend and Crew
:- One Market Plaza, Steuart Tower, Suite 2000
San Francisco
California
                                                                                                                                                                                                                                                                              Application US/08476798
                                                                                                                                            Platenburg, Gerald
Lee, Sang He
Pieper, Frank
                                                                                                                                                                                            Strijker, Rein
Heyneker, Herbert L.
                                                                                                                                                                                                                           Deboer, Herman A.
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RESULT 11
US-08-145-681-2
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FILING DATE: 07-JUN-1995
CLASSIFICATION: 800
PRIOR APPLICATION DATA:
APPLICATION UNMER: US 08/077,788
FILING DATE: 15-JUN-1993
PRIOR APPLICATION UNMER: US 07/895,956
FILING DATE: 15-JUN-1992
PRIOR APPLICATION UNMER: US 07/619,131
APPLICATION UNMER: US 07/619,131
APPLICATION UNMER: US 07/619,131
APPLICATION UNMER: US 07/444,745
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                                                                                                                                                                                                                                                                                                                            APPLICANT: Conneely, Orla M.
APPLICANT: Headon, Denis R.
APPLICANT: O'Malley, Bert W.
APPLICANT: May Gregory S.
TITLE OF INVENTION: Production of Recombinant Lactoferrin
TITLE OF INVENTION: and Lactoferrin Polypeptides Using cDNA Sequences in
TITLE OF INVENTION: Various Organsims
NUMBER OF SEQUENCES: 14
                                                                                           COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                            CORRESPONDENCE ADDRESS:
ADDRESSEE: Baker & Botts, L.L.P.
STREET: 910 Louisiana St
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE CHARACTERISTICS:
LENGTH: 709 amino acids
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ZIP: 94105
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy
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COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
                                                                                                                                                     COUNTRY: USA
ZIP: 77002
                                                                                                                                                                                                                                       STREET: 910 Locity: Houston
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les 10; Conservative
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OPERATING SYSTEM: PC-DOS/MS-DOS
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                                                                                                                                                                                                              Texas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              79.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      37,505
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Pred. No. 22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BB
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URRENT APPLICATION DATA:

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ANTI-SENSE: NO CRIGINAL SOURCE: ORGANISM: H. sapiens US-08-145-681-2
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US-08-250-308-2
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Matches
INFORMATION FOR SEQ ID NO: SEQUENCE CHARACTERISTICS: LENGTH: 711 amin
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Best Local Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TELEFAX: 713/229/1522
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
                                                                                                                                  PROGRAPPLICATION DATA:
PROGRAPPLICATION NUMBER: US 07/873,30
FILING DATE: 24-APR-1992
ATTORNEY/AGENT INFORMATION:
NAME: Adler Ph.D., Benjamin A.
REGISTRATION NUMBER: 35,423
REGISTRATION NUMBER: 35,423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GENERAL INFORMATION
                                                                                                                                                                                                                                                                                                   COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM FOCOMPACTION
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MOLECULE TYPE: protein HYPOTHETICAL: YES ANTI-SENSE: NO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REGISTRATION NUMBER: 29,329
REFERENCE/DOCKET NUMBER: 19
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ATTORNEY/AGENT INFORMATION:
NAME: McGregor, Martin L
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT: Headon, Louis W.
APPLICANT: O'Malley, Bert W.
APPLICANT: O'Malley, Bert W.
APPLICANT: O'Malley, Bert W.
APPLICANT: O'Malley, Bert W.
APPLICANT: D'APPLICANTION: Production of Recombinant Human
                                                                                   TELECOMMUNICATION INFORMATION: TELEPHONE: 7136515587
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PPLICANT:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LENGTH: 711 amino acids
TYPE: amino acid
TOPOLOGY: linear
                                                                                                                         REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                    APPLICATION NUMBER: US/08/250,308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                             COUNTRY:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           357 EVAARRARVVW 367
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                                                                                                                                                                                                                                                                                                                                                                                                                                                Texas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3: Fulbright & Jaworski Patent Department
1301 McKinney St.
                                                                                                                                                                                                                                                                                                                                                                                                                               USA
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Pred. No. 2
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MOLECULE TYPE: protein US-08-250-308-2
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TOPOLOGY: 1:
MOLECULE TYPE:
JS-08-154-019-4
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Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                             CURRENT APPLICATION DATA:

APPLICATION NUMBER: US/08/154,019

FILING DATE: 16-NOV-1993

CLASSIFICATION: 435

PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/461,333

FILING DATE: 05-JUN-1995

APPLICATION NUMBER: US 08/077,788

FILING DATE: 15-JUN-1993
                                                                                                            INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                      APPLICATION DATA:
FILING DATE: 15-UUN-1--
PRIOR APPLICATION NUMBER: US 07/895,956
APPLICATION NUMBER: 15-UUN-1992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
COMPUTER: FOR SYSTEM: PC-DOS/MS-DOS
                                                                    SEQUENCE CHARACTERISTICS:
LENGTH: 711 amino acid
                                                                                                                                                                                                                                                                                    FILING DATE: 15-JUN-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 0:
FILING DATE: 27-NOV-1990
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CORRESPONDENCE ADDRESS:
ADDRESSEE: Townsend and Townsend and Crew
STREET: One Market Plaza, Steuart Tower, Suite 2000
                                                                                                                                         TELECOMMUNICATION INFORMATION: TELEPHONE: 415-543-9600
                                                                                                                                                                                                                                   FILING DATE: 01-DEC-1989
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: Pieper, Frank
APPLICANT: Krimpenfort, Paul J.A.
TITLE OF INVENTION: Production of Recombinant Polypeptides
TITLE OF INVENTION: by Bovine Species and Transgenic Methods
NUMBER OF SEQUENCES: 38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT:
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                                                                                                                                                                             NAME: Liebescheutz, Joe O.
REGISTRATION NUMBER: 37,505
REFERENCE/DOCKET NUMBER: 16994-003123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COMPUTER: IBM PC
OPERATING SYSTEM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          COUNTRY:
                                                                                                                                                                                                                                                                         APPLICATION NUMBER:
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                                                 : 711 amino acids amino acid
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415-543-5043
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Heyneker, Herbert L.
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                                    linear
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Pred. No. 22;
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Query Match Best Local Matches 1

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Conservative

Similarity

79.0%;

Score 39.5; D Pred. No..22; 0; Mismatches

DB 1; Length 711;

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US-08-461-333-4
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                                   Matches
                                                Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER: US 08/077,788
FILING DATE: 15-UN-1993
PRIOR APPLICATION DATA:
APPLICATION UNMBER: US 07/895,956
FILING DATE: 15-UUN-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/619,131
FILING DATE: 27-NOV-1990
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/444,745
APPLICATION NUMBER: US 07/444,745
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Patent No.
                                                                                                                                                                                                         TELEFAX: 415-54
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                                                                                                                                                                                        TELEFAX: 415-543-5043
NFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                     APPLICATION NUMBER: US 07/444,745
FILING DATE: 01-DEC-1989
ATTORNEY/AGENT INFORMATION:
NAME: Liebescheutz, Joe O.
REGISTRATION NUMBER: 37,505
REFERENCE/DOCKET NUMBER: 16994-003123
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IEM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CLASSIFICATION: 800
PRIOR APPLICATION DATA:
PRIOR TARTON NUMBER: US 08/077,788
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STREET: One STATE: San Francisco
STATE: California
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT:
APPLICANT:
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ADDRESSEE: Townsend and Townsend and Crew
STREET: One Market Plaza, Steuart Tower, Suite 2000
                                                                                                                       MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT: Krimpenfort, Paul J.A.
TITLE OF INVENTION: Production of Recombinant Polypeptides
TITLE OF INVENTION: by Bovine Species and Transgenic Methods
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT:
APPLICANT:
                                                                                                                                                          LENGTH:
TYPE: a
                                                                                                                                         TYPE: amino acid
TOPOLOGY: linear
                                                                                                                                                                                                                                              TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICATION NUMBER: US/08
FILING DATE: 05-JUN-1995
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Platenburg, o
Sang He
                                   Conservative
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Heyneker, Herbert L.
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                                                                                                                                                                                                                                            415-543-9600
                                                79.0%;
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                                                Score 39.5;
Pred. No. 22;
                                                                 DB
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                                                               Length 711;
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Search completed: September 1, 2004, 00:18:37 Job time: 7.46667 secs
                                                                                                                                                                                                      ; ORGANISM: H. sapiens US-08-453-703-2
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US-08-453-703-2
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                                                                                                                                       Query Match
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICATION NUMBER: US/08/453,703
FILING DATE: Concurrently herewith
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/145,681
FILING DATE: October 28, 1993
ATTORNEY/AGENT INFORMATION:
NAME: Albert P. Halluin
NAME: Albert P. Halluin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Patent No. 5766939
                                                                                                                                                                                                                                                                                                                                                                              TELEFAX: 415-854-3694 INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                       ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                       SEQUENCE CHARACTERISTICS:
LENGTH: 711 amino acids
TYPE: amino acid
TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT:
                                                                                                                                                                                                                                                                      MOLECULE TYPE: pro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS SOFTWARE: Patentin Release #1.0, CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                        ANTI-SENSE:
                                                                                                                                                                                                                                                                                                                                                                                                               TELECOMMUNICATION INFORMATION:
TELEPHONE: 415-854-3660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ZIP: 10036
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CORRESPONDENCE ADDRESS:
ADDRESSEE: Pennie & Edmonds
STREET: 1155 Avenue of the J
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TITLE OF INVENTION: and Lactoferrin Portion of INVENTION: Various Organisms
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: May, Gregory S.
TITLE OF INVENTION: Produc
                                                                                                                                                                                                                                                                                                                                                                                                                                            NAME: Albert P. Halluin
REGISTRATION NUMBER: 25,227
REFERENCE/DOCKET NUMBER: 8206-024
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COUNTRY:
                                                                   357 EVAARRARVVW 367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               357 EVAARRARVVW 367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        INFORMATION:
                                                                                                                                     10;
                                                                                                1 EVAA-RARVVW 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                New York
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               New York
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conneely, Orla M.
Headon, Denis R.
O'Malley, Bert W.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               USA
                                                                                                                                   Conservative
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Floppy disk
                                                                                                                                                                                                                                                                                            protein
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                                                                                                                                                   79.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                and Lactoferrin Polypeptides Using cDNA Sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Production of Recombinant Lactoferrin
                                                                                                                                                                                                                                                                                                                                                                                2:
                                                                                                                                 Score 39.5; I
Pred. No. 22;
0; Mismatches
                                                                                                                                     0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Version #1.
                                                                                                                                                                    DB 1; Length 711;
                                                                                                                                 0,
                                                                                                                                   Indels
                                                                                                                                 1;
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Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Run on:
Published Applications AA:*

1: /cgn2 6/ptodata/2/pubpaa/US07 PUBCOMB.pep:*

2: /cgn2 6/ptodata/2/pubpaa/US06 NEW PUB.pep:*

3: /cgn2 6/ptodata/2/pubpaa/US06 NEW PUB.pep:*

4: /cgn2 6/ptodata/2/pubpaa/US06 PUBCOMB.pep:*

4: /cgn2 6/ptodata/2/pubpaa/US06 PUBCOMB.pep:*

6: /cgn2 6/ptodata/2/pubpaa/US08 PUBCOMB.pep:*

7: /cgn2 6/ptodata/2/pubpaa/US08 PUBCOMB.pep:*

8: /cgn2 6/ptodata/2/pubpaa/US08 PUBCOMB.pep:*

9: /cgn2 6/ptodata/2/pubpaa/US09B PUBCOMB.pep:*

10: /cgn2 6/ptodata/2/pubpaa/US09B PUBCOMB.pep:*

11: /cgn2 6/ptodata/2/pubpaa/US09C PUBCOMB.pep:*

13: /cgn2 6/ptodata/2/pubpaa/US09C PUBCOMB.pep:*

14: /cgn2 6/ptodata/2/pubpaa/US09C PUBCOMB.pep:*

16: /cgn2 6/ptodata/2/pubpaa/US09C PUBCOMB.pep:*

16: /cgn2 6/ptodata/2/pubpaa/US09C PUBCOMB.pep:*

16: /cgn2 6/ptodata/2/pubpaa/US09C PUBCOMB.pep:*

17: /cgn2 6/ptodata/2/pubpaa/US09C PUBCOMB.pep:*

18: /cgn2 6/ptodata/2/pubpaa/US09C PUBCOMB.pep:*

19: /cgn2 6/ptodata/2/pubpaa/US09C PUBCOMB.pep:*

19: /cgn2 6/ptodata/2/pubpaa/US09C PUBCOMB.pep:*

10: /cgn2 6/ptodata/2/pubpaa/US09C PUBCOMB.pep:*

10: /cgn2 6/ptodata/2/pubpaa/US09C PUBCOMB.pep:*
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50
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137.988 Million cell updates/sec
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

Result

15	14	13	12	11	10	φ	œ	7	6	ഗ	44	ω	N	Ь	No.
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70.0	70.0	76.0	79.0	79.0	79.0	79.0	79.0	79.0	79.0	79.0	79.0	79.0	79.0	79.0	Match Length
254	153	110	711	711	711	711	711	711	709	694	690	690	690	359	
14	16	16	16	15	15	5	14	14	14	13	16	14	14	14	BB
US-10-156-761-10952	US-10-437-963-126957	US-10-437-963-169771	US-10-408-765A-2000	US-10-440-464-69	US-10-341-434-218	US-10-341-434-202	US-10-170-221-4	US-10-169-297-9	US-10-170-221-2	US-10-023-096-2	US-10-639-835-4	US-10-077-381-4	US-10-076-816-4	US-10-169-297-49	ID
Sequence 10952, A	Sequence 126957,	16977	Sequence 2000, Ap	e 69, z	Sequence 218, App	Sequence 202, App	-	φ	W	2,	4	Sequence 4, Appli	Ф 4-	Sequence 49, Appl	Description

RESULT 2 US-10-076-816-4 ; Sequence 4, Application US/10076816 ; Publication No. US20030056244A1

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45	44	43	42	41	40	39	38	37	36	35	34	ω u	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
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-10-425-114-6928	-10-156-761-1158	0-437-963-17	-10-156-761-1202	09-738-626-593	S-10-437-963-11759	-10-424-599-28065	-10-424-599-2	-10-437-963-10615	-10-437-963-10615	-10-389-566-93	-10-424-599-18	-10-424-599-25080	-10-314-657-4	-10-324-967-3	-10-437-963-1139	-10-437-963-11398	-10-369-493-163	-10-369-493-1594	93-1557	-10-156-761-794	-10-369-493-2	-10-424-599-1543	0-425-114-5	-10-282-122A-620	-09-757-781-6	-862-179A-	S-10-369-493-1054	-10-156-761-132
equence 6928	equence 1158	quence 17	equence 12027,	quence 5935	equence 11759	equence 28065	equence 21	equence 10	equence 106155,	equence 93:	equence 189	equence 250802,	equence 46	equence 30, App	equence 11:	equence 11	equence 16312,	equence 15	quence 15571,	equence 7943	equence 23, Ap	equence 154	equence 5474	equence 62087,	quence 62, App	equence 1, Ap	ce 10540,	equence 1326

ALIGNMENTS

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RESULT 1

US-10-169-297-49

Sequence 49, Application US/10169297

Publication No. US20030171276A1

GENERAL INFORMATION:

APPLICANT: Tohdoh, Naoki
APPLICANT: Mirata, Masashi

APPLICANT: Enjoji, Takashi

TITLE OF INVENTION: Preventives and Remedies for Chronic

TITLE OF INVENTION: Hepatitis

FILE REFERENCE: 3435.1000-000

CURRENT APPLICATION NUMBER: US/10/169,297

CURRENT FILING DATE: 2002-10-31

PRIOR APPLICATION NUMBER: PCT/JP00/09393

PRIOR FILING DATE: 2000-12-28

PRIOR FILING DATE: 1999-12-28

NUMBER OF SEQ ID NOS: 50

SOFTWARE: FastSEQ for Windows Version 4.0

LENGTH: 150
 망
                                                                                                                                             US-10-169-297-49
                                                                 Query Match
Best Local Similarity
Matches 10; Conserv
                                                                                                                                                          LENGTH: 359
TYPE: PRT
ORGANISM: Homo sapiens
111 EVAARRARVVW 121
                             1 EVAA-RARVVW 10
                                                                   Conservative
                                                                                     79.0%;
                                                                   Score 39.5; D
Pred. No. 36;
0; Mismatches
                                                                                                        DB 14;
                                                                     0
                                                                                                    Length 359;
                                                                     Indels
                                                                   1;
                                                                 Gaps
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APPLICANT: Hagle, Frank E.
FILLE OF INVENTION: Feed Additive Compositions and Methods
FILE REFERENCE: 5065-8021.US00
CURRENT APPLICATION UNMBER: US/10/076,816
CURRENT FILING DATE: 2002-02-14
FRIOR APPLICATION NUMBER: US 60/269,188
PRIOR APPLICATION NUMBER: US 09/847,232
PRIOR APPLICATION NUMBER: US 09/847,232
PRIOR FILING DATE: 2001-02-04
PRIOR FILING DATE: 2001-05-02
PRIOR FILING DATE: 2001-05-06
PRIOR APPLICATION NUMBER: US 60/266,929
PRIOR FILING DATE: 2001-02-06
PRIOR APPLICATION NUMBER: US 60/201,182
PRIOR APPLICATION NUMBER: US 60/201,182
PRIOR APPLICATION NUMBER: US 60/201,182
PRIOR FILING DATE: 2000-05-02
                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: Huang, Ning
APPLICANT: Rodriguez, Raymond
APPLICANT: Rodriguez, Raymond
APPLICANT: Hagie, Frank E.
TITLE OF INVENTION: Expression of Human Milk Proteins in
TITLE OF INVENTION: Transgenic Plants
FILE REFERENCE: 50665-8022.US00
CURRENT APPLICATION NUMBER: US/10/077,381
CURRENT FILING DATE: 2002-02-14
PRIOR APPLICATION NUMBER: US 60/269,199
PRIOR FILING DATE: 2001-02-14
PRIOR FILING DATE: 2001-02-14
PRIOR APPLICATION NUMBER: US 60/269,199
PRIOR FILING DATE: 2001-02-05
PRIOR FILING DATE: 2001-02-06
PRIOR FILING DATE: 2001-05-02
PRIOR APPLICATION NUMBER: US 60/266,929
PRIOR FILING DATE: 2001-02-06
PRIOR APPLICATION NUMBER: US 60/201,182
PRIOR APPLICATION NUMBER: US 60/201,182
PRIOR SEQ ID NOS: 3
SOFTWARE: FastSEQ for Windows Version 4.0
RESULT 4
US-10-639-835-4
                                                                                               ₽,
                                                                                                                                        8
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; TYPE: PRT
; ORGANISM: Homo sapiens
US-10-077-381-4
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Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 4, Application US/10077381 Publication No. US20030074700A1
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                                                                                                                                                                                              Matches
                                                                                                                                                                                                                                         Query Match
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SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LENGTH: 690
TYPE: PRT
ORGANISM: Homo sapiens
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APPLICANT: Hagie, Fr
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                                                                                                                                                                                                                  Local
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                                                                                                 336 EVAARRARVVW 346
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                                                                                                                                             1 EVAA-RARVVW 10
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           h 79.0%;
Similarity 90.9%;
                                                                                                                                                                                                                  Similarity
                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                     79.0%;
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                                                                                                                                                                                              ; Score 39.5; D; Pred. No. 67; 0; Mismatches
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Pred. No. 67;
0; Mismatches
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B
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PRIOR FILING DATE: 2002-02-14
PRIOR APPLICATION NUMBER: US 60/269,199
PRIOR FILING DATE: 2001-02-14
PRIOR APPLICATION NUMBER: US 09/847,232
PRIOR APPLICATION NUMBER: US 09/847,232
PRIOR FILING DATE: 2001-05-02
PRIOR APPLICATION NUMBER: US 60/266,929
PRIOR APPLICATION NUMBER: US 60/201,182
PRIOR APPLICATION NUMBER: US 60/201,182
PRIOR APPLICATION NUMBER: US 60/201,182
PRIOR FILING DATE: 2000-05-02
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SOPTWARE: PastSEQ for Windows Version 4.0
SEQ ID NO 4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 2, Application US/10023096 Publication No. US20020160941A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local
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Publication No. US20040111766A1
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT: Rodřiguez, Raymond
APPLICANT: Hagie, Frank E.
TITLE OF INVENTION: Expression of Human Milk Proteins in
TITLE OF INVENTION: Transgenic Plants
TILE REFERENCE: 50665-8022.US01
CURRENT PEPLICATION NUMBER: US/10/639,835
CURRENT FILING DATE: 2003-08-12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GENERAL INFORMATION
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US/08/7
FILING DATE: 30-SEPT-1996
APPLICATION NUMBER: US/08/7
FILING DATE: 05-MAY-1994
ATTORNEY/AGENT INFORMATION:
NAME: Player, William E.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TYPE: PRT
ORGANISM: Homo sapiens
                                                                                                                                                           CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/10/090 01
FILING DATE:
CLASCOTTE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LENGTH: 690
                                                                                                                                                                                                                                       COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: Kruzel, Marian L.
APPLICANT: Kurecki, Tomasz
APPLICANT: Gollnick, Paul D.
APPLICANT: Gollnick, Paul D.
APPLICANT: Doyle, Darrell J.
TITLE OF INVENTION: Cloning, Expression, and Uses of Human
TITLE OF INVENTION: Lactoferrin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NUMBER OF SEQUENCES: 8
                                                                                                                                                                                                                                                                                                                                                                              COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                       STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                            ADDRESSEE:
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Similarity 90.9%;
                                                                                                                                                                                                                                                                                                                                                                                              SSEE: Jacobson, Price, Holman & Stern F: 400 Seventh St. N.W. Washington D.C.
                                                                                                                                                                                                                                                                                                                                                                                U.S.A.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   , Marian L.
                                                                     US 08/238,445
                                                                                                                 US/08/724,586
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Pred. No. 67;
0; Mismatches
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INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
LENGTH: 694 amino acid
                          INFORMATION FOR SEQ ID NO: 2: SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GENERAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LENGTH: 694 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TELEFONMUNICATION INFORMATION: TELEFHONE: (202) 638-6666
TELEFAX: (202) 393-5350
                                                                                                                                                               PRIOR APPLICATION DATA:

APPLICATION NUMBER: US/08/476,798
APPLICATION NUMBER: US/08/476,798
APPLICATION NUMBER: US 08/077,788
FILING DATE: 15-JUN-1993
APPLICATION NUMBER: US 07/895,956
FILING DATE: 15-JUN-1992
APPLICATION NUMBER: US 07/619,131
FILING DATE: 27-NOV-1990
APPLICATION NUMBER: US 07/444,745
FILING DATE: 01-DEC-1989
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      / Match 79.0%;
Local Similarity 90.9%;
les 10; Conservative
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                                                                                                                                                                                                                                                                                                                                                                                                                                            COMPUTER READABLE FORM:

MEDIUM TYPE: Floppy disk

COMPUTER: IBM FC COMPATIBLE

CORRATING SYSTEM: PC-DOS/MS-DOS

SOFTWARE: Patentin Release #1.0,

CURRENT APPLICATION DATA:
                                                                            REFERENCE/DOCKET NUMBER: 16994-003125
TELECOMMUNICATION INFORMATION:
TELEPHONE: 415-543-9600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CORRESPONDENCE ADDRESS:
ADDRESSEE: Townsend and Townsend and Crew
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT:
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                                                                                                                                                                                                                                                                                                                                                                                        APPLICATION NUMBER: US/10/170,221
FILING DATE: 11-Jun-2002
CLASSIFICATION: <Unknown>
                                                                                                                                  NAME: Liebescheutz, Joe O. REGISTRATION NUMBER: 37,505
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CITY: San Francisco
STATE: California
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EVAA-RARVVW 10
                                                                 TELEFAX: 415-543-5043
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Krimpenfort, Paul J.A.
INVENTION: Production of Recombinant Polypeptides
hv Rovine Species and Transgenic Metho
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Heyneker, Herbert L.
Platenburg, Gerald
Lee, Sang He
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Pred. No. 68
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US-10-170-221-4
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Best Local S
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ZIP: 94105
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
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APPLICANT: Tohdoh, Naoki
APPLICANT: Tohdoh, Naoki
APPLICANT: Enjoji, Takashi
I TITLE OF INVENTION: Preventives and Remedies for Chronic
TITLE OF INVENTION: Hepatitis
FILE REFERENCE: 3435.1000-000
CURRENT APPLICATION NUMBER: US/10/169,297
CURRENT FILING DATE: 2002-10-31
PRIOR APPLICATION NUMBER: PCT/JP00/09393
PRIOR FILING DATE: 2000-12-28
PRIOR FILING DATE: 2000-12-28
PRIOR FILING DATE: 1999-12-28
VIMBER OF SEQ ID NOS: 50
SOFTWARE: FastSEQ for Windows Version 4.0
SEQ ID NO 9
LENGTH: 711
TYPE: PRT
ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; TYPE: amino acid; TOPOLOGY: linear; MOLECULE TYPE: protein; SEQUENCE DESCRIPTION: SEQ ID NO: US-10-170-221-2
                                                                                                                                                                                                                                                                                                              Sequence 4, Application US/10170221 Publication No. US20030192068A1
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                                                                                                                                                                                                                                                                       GENERAL INFORMAL APPLICANT:
                                                  CORRESPONDENCE ADDRESS:
ADDRESSEE: Townsend and Townsend and Crew
STREET: One Market Plaza, Steuart Tower, Suite 2000
                                                                                                                  Pieper, Frank
Krimpenfort, Paul J.A.
Krimpenfort, Paul J.A.
TITLE OF INVENTION: Production of Recombinant Polypeptides
hv Rovine Species and Transgenic Methods
                                                                                                            NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                           357 EVAARRARVVW 367
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
CITY: San Francisco
STATE: California
COUNTRY: USA
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Heyneker, Herbert L.
Platenburg, Gerald
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Pred. No. 69;
0; Mismatches
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Pred. No. 69;
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TOPOLOGY: linear
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MOLECULE TYPE: protein
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SEQUENCE DESCRIPTION: SEQ ID NO:
US-10-170-221-4
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US-10-341-434-202
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APPLICATION NUMBER: US/08/476,798
APPLICATION NUMBER: US/08/476,798
APPLICATION NUMBER: US/08/077,788
APPLICATION NUMBER: US/07/935,956
PILING DATE: 15-UN-1992
APPLICATION NUMBER: US/07/619,131
PILING DATE: 27-NOV-1990
APPLICATION NUMBER: US/07/444,745
PILING DATE: 01-DEC-1989
ATTORNEY/AGENT INFORMATION:
NAME: Liebescheutz, Joe O.
REGISTRATION NUMBER: J7,05
REFERRNCE/DOCKET NUMBER: 16994-003125
REFERRNCE/DOCKET NUMBER: 16994-003125
TELECOMMUNICATION INFORMATION:
TELEPAN: 415-543-9600
TELEPAN: 415-543-9600
TELEPAN: 415-543-963
INFORMATION FOR SEQ ID NO: 4:
SEQUENCE CHARACTERISTICS:
ITRUCTURE: 1 = mino = aside.
                                                                                                                                                                     ; TYPE: PRT ; ORGANISM: Homo sapiens US-10-341-434-202
                                                                                                                                                                                                          SOFTWARE: PatentIn version 3.1
SEQ ID NO 202
LENGTH: 711
TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 202, Application US/10341434
Publication No. US20030215835A1
GENERAL INFORMATION:
APPLICANT: OriGene Technologies
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match 79.0
Best Local Similarity 90.9
Matches 10; Conservative
                                                                                     Matches
                                                                                                       Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                         APPLICANT: Origene Technologies
TITLE OF INVENTION: Differentially Regulated Prostate Cancer Genes
FILE REFERENCE: 9U 204 205 R1
CURRENT APPLICATION NUMBER: US/10/341,434
CURRENT FILING DATE: 2003-07-18
PRIOR APPLICATION NUMBER: US 60/348,164
PRIOR FILING DATE: 2002-01-15
PRIOR APPLICATION NUMBER: US 60/348,119
PRIOR APPLICATION NUMBER: US 60/348,119
PRIOR PILING DATE: 2002-01-15
PRIOR FILING DATE: 2002-01-15
PRIOR FILING DATE: 2002-01-15
PRIOR FILING DATE: 2002-01-15
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OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
      357 EVAARRARVVW 367
                                                                                   10;
                                            1 EVAA-RARVVW 10
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FILING DATE: 11-Jun-2002
CLASSIFICATION: <Unknown>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LENGTH: 711 amino acids TYPE: amino acid
                                                                                     Conservative
                                                                                                       79.0%;
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                                                                                   0; Mismatches
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                                                                                                       Score 39.5;
Pred. No. 69;
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Pred. No. 69;
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US-10-341-434-218
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                                                                                                                                                         ; TYPE: PRT; ORGANISM: Homo sapiens US-10-440-464-69
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SEQ ID NO 218
LENGTH: 711
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SEQ ID NO 69
LENGTH: 711
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                                                                                              Query Match
Best Local
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Publication No. US20040018528A1
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Best Local Similarity
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TITLE OF INVENTION: Differentially Regulated Prostate Cancer Genes
FILE REFERENCE: 9U 204 205 R1
CURRENT APPLICATION NUMBER: US/10/341,434
CURRENT FILING DATE: 2003-07-18
PRIOR APPLICATION NUMBER: US 60/348,164
PRIOR FILING DATE: 2002-01-15
PRIOR FILING DATE: 2002-01-15
PRIOR FILING DATE: 2002-01-15
NUMBER OF SEQ ID NOS: 238
NUMBER OF SEQ ID NOS: 238
                                                                                Matches
                                                                                                                                                                                                                                                                                          TITLE OF INVENTION: NOVEL BIOMARKERS OF TYROSINE KINASE INHIBITOR EXPOSURE TITLE OF INVENTION: AND ACTIVITY IN MANWALS FILE REFERENCE: 038602/1592 US/10/440,464 CURRENT APPLICATION NUMBER: US/10/440,464 CURRENT FILING DATE: 2003-05-19 PRIOR APPLICATION NUMBER: 60/380,872 PRIOR APPLICATION NUMBER: 60/448,872 PRIOR APPLICATION NUMBER: 60/448,922 PRIOR APPLICATION NUMBER: 60/448,922 PRIOR APPLICATION NUMBER: 60/448,922 PRIOR APPLICATION NUMBER: 60/448,874 PRIOR FILING DATE: 2003-02-24 PRIOR FILING DATE: 2003-02-24 PRIOR FILING DATE: 2003-02-24 PRIOR FILING DATE: 2003-02-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: O'FARRELL, ANNE-MARIE APPLICANT: MORIMOTO, ALYSSA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: DEPRIMO, SAMUEL APPLICANT: O'FARRELL, ANN
                                                                                                                                                                                                                                                                                 NUMBER OF SEQ ID NOS: 185
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357 EVAARRARVVW 367
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                                   1 EVAA-RARVVW 10
                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SMOLICH, BEVERLY
MANNING, WILLIAM
WALTER, SARAH
CHERRINGTON, JULIE
SCHILLING, JIM
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o. US20030215835A1
                                                                                Conservative
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                                                                             Score 39.5; D
Pred. No. 69;
0; Mismatches
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Pred. No. 69;
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RESULT 14
US-10-437-963-126957
; Sequence 126957, Application US/10437963
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US-10-437-963-169771
; Sequence 169771, Application US/10437963
; Publication No. US20040123343A1
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US-10-408-765A-2000
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                                                                                                                                                                                                                                                                                                                                    CURRENT APPLICATION NUMBER: US/10/437,963
CURRENT FILING DATE: 2003-05-14
NUMBER OF SEQ ID NOS: 204966
SEQ ID NO 169771
LENGTH: 110
                                                                                                                                                                 Query Match
Best Local Similarity
Matches 7; Conserv
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CURRENT APPLICATION NUMBER: US/10/408,765A
CURRENT FILLING DATE: 2003-04-04
NUMBER OF SEQ ID NOS: 3077
SOFTWARE: FastSEQ for Windows Version 4.0
SEQ ID NO 2000
LENGTH: 711
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                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT: Barbazuk, Brad
APPLICANT: Li, Ping
TITLE OF INVENTION: Rice Nucleic Acid Molecules and Other Molecules Associated With
TITLE OF INVENTION: Plants and Uses Thereof for Plant Improvement
FILE REFERENCE: 38-21(53221)B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT: La Rosa, Thomas J. APPLICANT: Kovalic, David K. APPLICANT: Zhou, Yihua
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: Ghosh, Soumitra S. APPLICANT: Fahy, Eoin D. APPLICANT: Zhang, Bing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: Warnock, Dale E.
TITLE OF INVENTION: TARGETS FOR THERAPEUTIC INTERVENTION
TITLE OF INVENTION: IDENTIFIED IN THE MITOCHONDRIAL PROTEOME
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT:
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ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                 ORGANISM: Oryza sativa FEATURE:
                                                                                                                                                                                                                                                                                                                        TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       357 EVAARRARVVW 367
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Similarity 90.9%;
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Barbazuk, Brad
                                                                                                                                                                       Conservative
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                                                                                                                                                                                       76.0%;
                                                                                                                                                                   Score 38; DB 16; Length 110; Pred. No. 23; 1; Mismatches 0; Indels
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Pred. No. 6
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APPLICANT: LACEDA, FACEO
APPLICANT: HORIKAWA, JUN
APPLICANT: HORIKAWA, HIROSHI
APPLICANT: SHIBA, TADAYOSHI
APPLICANT: SHIBA, TADAYOSHI
APPLICANT: HATTORI, VOSHIYUKI
APPLICANT: HATTORI, MASAHIRA
TITLE OF INVENTION: NOVEL POLYNUCLEOTIDES
FILE REFERENCE: 249-262
CURRENT PELING DATE: 2002-05-29
PRIOR APPLICATION NUMBER: US/10/156,761
CURRENT FILING DATE: 2001-05-39
PRIOR APPLICATION NUMBER: JP 2001-204089
PRIOR PHILING DATE: 2001-05-30
PRIOR PHILING DATE: 2001-08-02
PRIOR FILING DATE: 2001-08-02
VANMBER OF SEQ ID NOS: 15109
SEQ ID NO 10952
LENGTH: 254
                                                                                                                                                               ; ORGANISM: Streptomyces avermitilis US-10-156-761-10952
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US-10-437-963-126957
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TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GENERAL INFORMATION:
APPLICANT: OMURA, SATOSHI
APPLICANT: IKEDA, HARUO
APPLICANT: ISHIKAWA, JUN
                                                                                 Matches
                                                                                                     Query Match
Best Local
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: La Rosa, Thomas J. APPLICANT: Kovalic, David K. APPLICANT: Zhou, Yihua
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LOCATION: (1)..(153)
OTHER INFORMATION: unsure at all Xaa locations
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                                     2 VAARARVVW 10
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                                                                               Similarity 6; Conserv
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IARRARTVW 40
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Yongwei
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                                                                               Conservative
                                                                                               70.0%;
                                                                             Score 35; DB 14; Length 254; Pred. No. 1.7e+02; Indels 1; Mismatches 2; Indels
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Pred. No. 1.1e+02;
1; Mismatches 2
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Search completed: September 1, 2004, 00:49:16 Job time : 24.8 secs

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Title:
Perfect score:
Sequence:
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Maximum Match 100%
Listing first 45 summaries
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Maximum DB seq length: 2000000000
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1: pir1:*
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50
1 EVAARARVVW 10
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165.847 Million cell updates/sec
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

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331	302	285	285	1438	930	855	707	706	390	387	213	158	146	117	1337	689	392	380	380	210	108	1927	1926	1920	1918	912	175	711	Length D
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ALIGNMENTS

RESULT 1

A;Molecule type: mRNA A;Molecule type: mRNA A;Residues: 3-711 <pow> A;Cross-references: EMBL:X52941; NID:g34411; PIDN:CAA37116.1; PID:g34412 A;Cross-references: EMBL:X52941; NID:g34411; PIDN:CAA37116.1; PID:g34412 A;Stowell, K.M.; Rado, T.A.; Funk, W.D.; Tweedie, J.W. Biochem. J. 276, 349-355, 1991 A;Title: Expression of cloned human lactoferrin in baby-hamster kidney cells. A;Reference number: S15853; MUID:g1264786; PMID:2049066 A;Accession: S15853 A;Status: nucleic acid sequence not shown; not compared with conceptual translation A;Molecule type: mRNA A;Residues: 20-31 <st1> A;Accession: S20841 A;Residues: 20-28,'X',30-31 <st2></st2></st1></pow>	A;Molecule type: mRNA A;Residues: 1-148,77',150-422,'C',424-711 <rey> A;Cross-references: EMBL:X53961; NID:g34415; PIDN:CAA37914.1; PID:g34416 R;Teng,C.T:; Liu, Y: Yang, N: Walmer, D: Panella, T. Mol. Endocrinol. 6, 1969-1981, 1992 A;Title: Differential molecular mechanism of the estrogen action that regulates lactofer A;Reference number: A45401 A;Accession: A45401 A;Molecule type: DNA A;Residues: 1-15 <ten> A;Cross-references: GB:S2659; NID:g263311; PIDN:AAB24877.1; PID:g263312 A;Experimental source: placenta A;Mocte: sequence extracted from NCBI backbone (NCBID:122202) A;Title: Nucleotide sequence of human lactoferrin cDNA. A;Reference number: S10324; MUID:90326549; PMID:2374734 A;Accession: S10324</ten></rey>	submitted to the EMBL Data Library, March 1994 A;Reference number: G06820 A;Accession: G01394 A;Status: preliminary; translated from GB/EMBL/DDBJ A;Molecule type: mRNA A;Residues: 1-711 <cido 1-711="" <cido="" a;accession:="" a;cross-references:="" a;residues:="" a;title:="" complete="" embl:u07643;="" gland="" human="" lactoferrin.="" mammary="" nid:g467236;="" nucleotide="" of="" pid:g467237="" pidn:aab60324.1;="" s11228="" s11228<="" sequence="" td=""><td>lactotransferrin precursor [validated] - human N;Alternate names: lactoferrin C;Species: Homo sapiens (man) C;Date: 31-Mar-1992 #sequence_revision 21-Nov-1997 #text_change 08-Dec-2000 C;Accession: G01394; S11228; A45401; S10324; S15853; S20841; S07160; A61169; A31000; S74R;Cho, Y.</td></cido>	lactotransferrin precursor [validated] - human N;Alternate names: lactoferrin C;Species: Homo sapiens (man) C;Date: 31-Mar-1992 #sequence_revision 21-Nov-1997 #text_change 08-Dec-2000 C;Accession: G01394; S11228; A45401; S10324; S15853; S20841; S07160; A61169; A31000; S74R;Cho, Y.

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A; Molecule type: mRNA
A; Molecule type: mRNA
A; Residues: 436-487, 'A', '489-711 < RAD>
A; Residues: 436-487, 'A', '489-711 < RAD>
A; Cross-references: EMBL.M18642; NID:g186815; PIDN:AAA866655.1; PID:g38
A; Panella, T.J.; Liu, Y.; Huang, A.T.; Teng, C.T.
Cancer Res. 51, 3037-3043, 1991
A; Title: Polymorphism and altered methylation of the lactoferrin gene
A; Title: Polymorphism and altered methylation of the lactoferrin gene
A; Reference number: A61169; MUID:91235214; PMID:1674448
A; Accession: A61169
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Blood 70, 989-993, 1987
A;Title: Isolation of lactoferrin cDNA from a human myeloid library and expression a:Reference number: S07160; MUID:88001031; PMID:3477300
A; Molecule type: DNA
A; Residues: 1-175 < PED>
A; Cross-references: EMBL: X67865; NID: 9472886; PIDN: CAA48064.1; PID: 9439646
R; Alonso, U.C.; Luder, G.; Stiege, A.C.; Chai, S.; Weise, F.; Trautner, T.A.
Gene 204, 201-212, 1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A;Molecule type: protein
A;Molecule type: protein
A;Residues: 20-140,142-169,171-203,'L',205,'K',207-208,'K',210-385,'Q',387-391,'W',393-
A;Rote: this is the final paper in a series
A;Houen, G; Hoegdall, E.V.; Barkholt, V.; Norskov, L.
Bur. J. Biochem. 241, 303-308, 1996
Bur. J. Biochem. 241, 303-308, 1996
A;Title: Lactoferrin: similarity to diamine oxidase and purification by aminohexyl affi
A;Title: Lactoferrin: similarity to diamine oxidase and purification by Aminohexyl affi
A;Reference number: S74119; MUID:97054624; PMID:8898921
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A;Accession: A31000
                                                                                                                                                                                                                                                                                  hypothetical protein 41 - phage SPP1
C;Species: phage SPP1
C;Date: 27-Jan-1995 #sequence_revision 27-Jan-1995 #text_change
C;Accession: S438L5; T42345; S41189
R;Pedre, X.; Weise, F.; Chai, S.; Lueder, G.; Alonso, J.C.
J. Mol. Biol. 236, 1324-1340, 1994
A;Title: Analysis of cis and trans acting elements required for A;Reference number: S43798; MUID:94172631; PMID:8126723
A;Accession: S43815
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A;Residues: 'G',23-24,'R',26-27,'XX',30-32 <HOU:
A;Experimental source: neutrophil granulocytes
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A; Residues: 3-701, 'SWKPVN' < PAN>
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, Superfamily: transferrin; transferrin repeat homology
, Superfamily: transferrin; iron binding; milk
, Keywords: duplication; glycoprotein; iron binding; milk
, Keywords: duplication; glycoprotein; iron binding; milk
, 1-19/Domain: signal sequence #status predicted <SIG>
, 20-711/Product: lactotransferrin #status experimental <MAT>
, 21-356/Domain: transferrin repeat homology <TRHI
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RESULT 3
B75127
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                                                                                                                                                                                          RESULT 4
S43719
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submitted to the EMBL Data Library, July 1999
A;Description: Pyrococcus abyssi genome sequence:
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                                                                                                          A;Molecule type: mRNA
A;Residues: 1-1918 «VIL»
A;Cross-references: EMBL:Z27166
C;Keywords: carbohydrate digest:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A;Molecule type: DNA
A;Residues: 1-912 <KAW>
A;Residues: 1-912 <KAW>
A;Cross-references: GB:AJ248285; GB:AL096836; NID:g5458067;
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A;Accession: B75127
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C;Date: 20-Aug-1999 #sequence_revision
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                                                                                                                                                                                A; Reference number: A; Accession: S43719
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60.0%;
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Pred. No.
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Pred. No. 1
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A; Accession: SULLIVE STANDA
A; FOLECULE TYPE: MRNA
A; FOLECULE TYPE: MRNA
A; Residues: 1-1926 < MANN
A; Residues: 1-1926 < MANN
A; Residues: 1-1926 < MANN
A; Note: the authors translated the codon GCC for residue 1551 as Gly and CCA for residue
A; Note: part of this sequence, including the amino end of the mature protecin, was confir
C; Keywords: carbohydrate digestion; glycosidase; hydrolase; intestine; transmembrane prof
F; 1-19/Domain: signal sequence #status predicted <SIO>
F; 20-860/Domain: propeptide #status predicted < PRO>
F: 867-1926/Product: beta-glycosidase complex #status experimental < MAT>
                                                                                                                                                            RESULT 7
                                                           N;Contains: glycosylceramidase (EC 3.2.1.62); lactase (EC 3.2.1.108)
C;Species: Homo sapiens (man)
C;Date: 07-Sep-1990 #sequence_revision 07-Sep-1990 #text_change 21-Jul-2000
                                                                                                             beta-glycosidase complex precursor N;Contains: glycosylceramidase (EC
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          beta-glycosidase complex precursor - rabbit N;Contains: glycosylceramidase (EC 3.2.1.62); C;Species: Oryctolagus cuniculus (domestic rab
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    R.Villa, M.; Brunschwiler, D.; Gaechter, T.; Boll, W.; Semenza, G.; Mantei, N. FEBS Lett. 336, 70-74, 1993
A;Title: Region-specific expression of multiple lactase-phlorizin hydrolase genes A;Reference number: S43719; MUID:94085594; PMID:8262219
A;Accession: S43720
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C;Date: 13-Jan-1995 #sequence_revision 01-Dec-2000
C;Accession: S43720; S43721
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A; Residues: 1-1920 <VIL>
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Alternate names: lactase / phlorizin hydrolase
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,Residues: 'MELFWS',1-11,'Q',13-207 <VI2>
,Cross-references: EMBL:Z27168; NID:g418866; PID
,Keywords: carbohydrate digestion; glycosidase;
  ;Accession: S01168
;Mantei, N.; Villa, M.; Enzler,
MBO J. 7, 2705-2713, 1988
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Pred. No. 71;
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Pred. No. 71;
                                                                                                        - human
3.2.1.62); lactase
                       Wacker,
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se; hydrolase; intestine
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C;Genetics:
A;Gene: APE2036
C;Superfamily: F
A;Gene: CC2085
C;Superfamily:
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A;Title: Complete Genome Sequence of Caulobacter crescentus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 glutathione S-transferase [imported] - Caulobacter crescentus C;Species: Caulobacter crescentus C;Date: 20-Apr-2001 #sequence_revision 20-Apr-2001 #text_change 02-Aug-2002 C;Accession: D87507
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Nolecule type: DNA
A; Molecule type: DNA
A; Residues: I-108 < KAW>
A; Cross-references: DDBJ:AP000063; NID:g5105654; PIDN:BAA81046.1;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                hypothetical protein APE2036 - Aeropyrum pernix (strain C;Species: Aeropyrum pernix C;Date: 20-Aug-1999 #sequence_revision 20-Aug-1999 #text C;Accession: F72507
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A; Molecule type: mRNA
A; Residues: 1-1927 < MANN
A; Residues: 1-1927 < MANN
A; Cross-references: EMBL:X07994; NID:g34399; PIDN:CAA30801.1; PID:g3-A; Cross-references: EMBL:X07994; NID:g34399; PIDN:CAA30801.1; PID:g3-C; Keywords: carbohydrate digestion; glycosidase; hydrolase; intestin F;1-19/Domain: signal sequence #status predicted < SIG-F;10-866/Domain: propeptide #status predicted < MAT-F;867-1927/Product: beta-glycosidase complex #status predicted < MAT-F;1883-1901/Domain: transmembrane #status predicted < TMM-Final Manual Producted < MAT-Final Manual Producted 
                                                                      C; Genetics:
                                                                                                                                     A; Molecule type: DNA
A; Residues: 1-210 <S
                                                                                                                                                                                                                             A; Reference number: A87249; A; Accession: D87507
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A;Reference number: A72450;
A;Accession: F72507
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                                                                                                  A; Cross-references:
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Best Local S
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                                                                                           :AE005673; NID:g13423566; PIDN:AAK24056.1; GSPDB:GN00148
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50; MUID:99310339; PMID:10382966
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T.; Kudoh,
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h, Y.; Yamazaki,
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R;Wood, D.W.; Setubal, J.C.; Kaul, R.; Monks, D.; Chen, L.; Wood, G.E.; Chen, Y.; Woo, erage, G.; Gillet, W.; Grant, C.; Guenthner, D.; Kutyavin, T.; Levy, R.; Li, M.; McClel; Karp, P.; Romero, P.; Zhang, S.
Science 294, 2317-2323, 2001
A;Authors: Yoo, H.; Tao, Y.; Biddle, P.; Jung, M.; Krespan, W.; Perry, M.; Gordon-Kamm,
                                                                                                                                                                                                                                                                                                                                                                                                    R;Goodner, B.; Hinkle, G.; Gattung, S.; Miller, N.; Blanchard, M.; Qurollo, B.; Goldman, A.; Liu, F.; Wollam, C.; Allinger, M.; Doughty, D.; Scott, C.; Lappas, C.; Markelz, B.; Science 294, 2323-2328, 2001
A;Title: Genome Sequence of the Plant Pathogen and Biotechnology Agent Agrobacterium tum A;Reference number: A97359; MUID:21608551; PMID:11743194
A;Accession: G97517
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DNA processing chain A (AF088896) [imported] - Agrobacterium tumefaciens (strain C;Species: Agrobacterium tumefaciens C;Decies: Agrobacterium tumefaciens C;Date: 30-Sep-2001 #sequence_revision 30-Sep-2001 #text_change 18-Nov-2002 C;Accession: G97517
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A; Map position: circular chromosome
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A;Molecule type: DNA
A;Residues: 1-380 <KUR>
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A;Residues: 1-380 <KUR>
A;Cross-references: GB:AE008688; PIDN:AAL42311.1; PID:g17739713; GSPDB:GN00186
A;Experimental source: strain C58 (Dupont)
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A;Title: The Genome of the Natural Genetic Engineer Agrobacterium tumefaciens C58
A;Reference number: AB2577; MUID:21608550; PMID:11743193
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Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NA processing chain A [imported] - Agrobacterium tumefaciens (strain C58, Dupont);Species: Agrobacterium tumefaciens;Date: 11-Jan-2002 #sequence_revision 11-Jan-2002 #text_change 18-Nov-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Status: preliminary
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                                                                                                                                                                                     similarity
6; Conser
    protein
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    B1496_C1_154 - Mycobacterium
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                                                                                                                                                                                     Score 35; DB
Pred. No. 22;
2; Mismatches
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Pred. No. 22;
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0; Mismatches
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RESULT 14

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probable UvrD2 DNA helicase (EC 3.6.1.) [imported] - Sinorhizobium meliloti (;pecies: Sinorhizobium meliloti)
C;pecies: Sinorhizobium meliloti
C;pecies: A.A. Pa; Barloy-Aubler, F.; Bows
R;Barnett, M.J.; Fisher, R.F.; Jones, T.; Komp, C.; Abola, A.P.; Barloy-Hubler, F.; Bows
R;Barnett, M.J.; Fisher, R.F.; Jones, T.
A. Palm, C.; Peck, M.C.; Surzycki, R.; Wells, D.H.; Yeh, K.C
Proc. Natl. Acad. Sci. U.S.A. 98, 9883-9888, 2001
A;Title: Nucleotide sequence and predicted functions of the entire Sinorhizobium melilot
A;Title: Nucleotide sequence and predicted functions of the entire Sinorhizobium melilot
A;Title: Nucleotide sequence and predicted functions of the entire Sinorhizobium melilot
A;Cosssion: A95418
A;Cosssion: A95418
A;Cosssion: A95426; MUID:21396509; PMID:11481432
A;Cosssion: A95426; MUID:21396509; PMID:11481432
A;Cosssion: A95426; MUID:21396509; PMID:11481432
A;Coss-reference: GB:AE006469; PIDN:AAK65907.1; PID:gl4524418; GSPDB:GN00165
A;Experimental source: Strain 1021, megaplasmid pSymA
A;Exertine type: DNA
A;Experimental source: Strain 1021, megaplasmid pSymA
A;Experimental source: Strain 1021, megaplasmid p
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            C;Species: Mycobacterium leprae
C;Date: 19-Mar-1997 #sequence revision 25-Apr-1997
C;Accession: S72753; T11012
R;Smith, D.R.; Robison, K.
submitted to the EMBL Data Library, November 1993
A;Description: Mycobacterium leprae cosmid B1496.
                                                                                                                                                                                                                                              A;Genome: plasmid
C;Superfamily: helicase
C;Keywords: hydrolase
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A;Accession: T11012
A;Status: preliminary; translated from GB/EMBL/DDBJ
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A; Residues: 1-392 < SMI>
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Best Local S
Matches 7
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Best Local
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679 DVAARMRTMW 688
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7; Conserv
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                                                                                                                            Similarity 60. 6; Conservative
                                                          EVAARARVVW 10
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70.0%;
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Pred. No. 40;
2; Mismatches
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Pred. No.
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RESULT 15
JN0731
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R;Izumi, Y.; Hirose, T.; Tamai, Y.; Hirai, S.; Nagashima, Y.; Fujimoto, T.; Tabuse, Y.;
J. Cell Biol. 143, 95-106, 1998
A;Title: An atypical PKC directly associates and colocalizes at the epithelial tight jun A;Reference number: Z17827; MUID:98437350; PMID:9763423
A;Accession: T13948
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C;Date: 20-Sep-1999 #sequence_revision 20-Sep-1999 #text change 21.7.1-20.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A;Status: preliminary; translated from GB/EMBL/DDBJ A;Molecule type: DNA A;Residues; 1-117 <ALO>A;Cross-references: EMBL:X97918; PIDN:CAA66504.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A;Residues: 1-117 < CHA>
A;Cross-references: EMBL:X65941; NID:g14843; PIDN:CAA46745.1; PID:g579085
A;Cross-references: EMBL:X65941; NID:g14843; PIDN:CAA46745.1; PID:g579085
A;Cross-references: EMBL:X65941; NID:g14843; PIDN:CAA46745.1; PID:g579085
A;Cross-reference: EMBL:X65941; NID:g14843; PIDN:CAA46745.1; PID:g579085
A;Cross-reference: EMBL:X65941; NID:g14843; PID:GAA46745.1; PID:g579085
A;Cross-reference: EMBL:X65941; NID:g14843; PIDN:CAA46745.1; PID:g579085
A;Cross-reference: EMBL:X65941; PID:g14845
A;Cross-reference: EMBL:X65941; PID:g14845; 
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A,Reference number: JN0729, MUID:93328123, PMID:8335259
A,Accession: JN0731
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                R;Chai, S.; Szepan,
Gene 129, 41-49, 19
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A;Molecule type: mRNA
A;Residues: 1-1337 <IZU>
Search completed: September 1, 2004, 00:16:57 Job time : 10.8 secs
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N;Alternate names: hypothetical protein 43
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Best Local S
Matches 6
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;Species: phage SPP1

;Date: 03-Feb-1994 #sequence revision 03-Feb-1994 #text_change 11-May-2000
;Accession: JN0731; T42350; S21430
;Accession: JN0731; T42350; S71430
;Chai, S.; Szepan, U.; Lueder, G.; Trautner, T.A.; Alonso, J.C.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ;Accession: T42350
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Best Local Similarity
Matches 6; Conserv
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Molecule type: DNA
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Local Similarity 60.0%;
hes 6; Conservative
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                                                                                                                                                                                   101 EVAARVKELW 110
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75.0%;
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Pred. No. 11;
2; Mismatches
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escherichia deinococcus

homo sapien rickettsia hordeum vul

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Post-processing: Minimum Match 0%
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153.148 Million cell updates/sec
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Q9z340 rattus norv
Q7811 equus cabal
P08071 mus musculu
Q02282 feline immu
P37938 schizophyll
P03066 escherichia
Q929h5 listeria in
Q8y577 listeria mo
P87115 schizosacch
Q00106 ictalurid h
P49180 caenorhabdi
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TRFL HUMAN
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Lactot
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RA Wei X.
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RT Sequei
RL Submit
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RA Wei X.
RT SEQUEN
RC TISSUE
RA WEINELL

SEQUENCE FROM N.A.
TISSUE=Probtate;
MEDLINE=22388257; PubMed=12477932;
Strausberg R.L., Feingold E.A., Grouse L.H., Derge J.G.,
Strausberg R.D., Collins F.S., Wagner L., Shenmen C.M., Schuler G.D.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TISSUE-Mammary gland;
Cheng H., Chen X., Huan L.;
"cDNA cloning and sequence analysis of human lactoferrin.";
submitted (DEC-2000) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                "ISSUE=Bone marrow;
Wei X., Han J., Rado T.A.;
"Human neutrophil lactoferrin coding sequences.";
                                                                                                                                                                                                                                                                                                                                                      SEQUENCE FROM N.A.
TISSUS=Mammary gland;
TISSUS=Mammary gland;
Liang Q., Jimenez-Flores R., Richardson T.;
"Molecular cloning and sequence analysis of human lactoferrin.";
"Molecular cloning and sequence analysis of human lactoferrin.";
Submitted (DEC-1991) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TISSUE=Mammary gland;
MEDLINE=90384839; PubMed=2402455;
Rey M.W., Woloshuk S.L., de Boer H.A.,
"Complete nucleotide sequence of human
Nucleic Acids Res. 18:5288-5288(1990).
                                                                                                                                                                                                 SEQUENCE FROM N.A.
                                                                                                                                                                                                                                    Submitted (FEB-1992) to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Homo sapiens (Human).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Submitted
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P02788; 000756; Q16780; Q16785; Q16786; Q16789; Q96KZ4; Q96KZ5;
Q99HZ3;
21-JUL-1986 (Rel. 01, Created)
15-JUL-1999 (Rel. 38, Last sequence update)
10-OCT-2003 (Rel. 42, Last annotation update)
Lactotransferrin precursor (Lactoferrin) (Contains: Lactoferroxin Lactoferroxin B; Lactoferroxin C].
                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
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TSAS RICTS
JI60 HORUU
GIB2 XANCP
TIR1 ECOLI
DP3A DE1A
AV297 HUMAN
TRFL BOVIN
HBA MICGA
RECZ RALSO
LIGT ECOLI
YOHC ECOLI
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Result No.

Score 9

Match

flanking region

DNA

databases

/ Taejon,

Korea.

Minimum DB Maximum DB

seq

Total number of Searched:

141681 seqs,

Scoring table: Sequence: Perfect score:

BLOSUM62

Gapop 10.0 ,

Run

92:

OM protein -

Copyright

Database

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SEQUENCE OF 237-711 FROM N.A.

McCombie W.R., Wilson R., Chen E., Gibbs R., Zuo L., Johnson D.,

Nhan M., Parnell L., Dedhia N., Ansari A., Mardis E., Schutz K.,

Gnoj L., la Bastide M., Kaplan N., Greco T., Touchman J., Muzny D.,

Chen C.N., Evans C., Fitzgerald M., See L.H., Tang M., Porcel B.M.,

Dragan Y., Giacalone J., Pae A., Powell E.H., Sinsky K.A., Desilva

Diaz-Perez S., Zhou X., Yu Y., Watanabe M., Doggett N., Garcia D.,

Sagripanti J.L.,
Anderson B.F., Baker H.M., Norris G.E., Rice D.W., Baker E.N.; "Structure of human lactoferrin: crystallographic structure analysis and refinement at 2.8-A resolution.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Metz-Boutique M.-H., Jolles J., Mazurier J., Schoentgen Legrand D., Spik G., Montreuil J., Jolles P., "Human lactotransferrin: amino acid sequence and structu comparisons with other transferrins.";
Eur. J. Biochem. 145:659-666(1984).
                                                                                                                                                                                                                                 Rado T.A., Wei X., Benz E.J. Jr.;
"Isolation of lactoferrin cDNA from a human myeloid library expression of mRNA during normal and leukemic myelopoiesis."
                                                                                                                                                                                                                                                                                                                                                                                                                                                           "The present state of the human lactotransfe alignment of the cyanogen bromide fragments
                                           MEDLINE=90064528;
                                                                                                                                                                                                                                                                                                                                                                            Metz-Boutigue M.-H., Jolles J., Mazurier J., Spik G., Montreuil
                                                                                                                                                                                                                                                                                                                                                                                                                                               N- and C-terminal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRELIMINARY SEQUENCE OF 20-73; 134-171; 257-278 AND 347-530 MEDLINE=82046817; PubMed=6794640;
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MEDLINE=90326549; PubMed=2374734;
                                                                                                                                                                                                                                                                            SEQUENCE OF 436-711 FROM N.A. MEDLINE=88001031; PubMed=3477300;
                                                                                                                                                                                                                                                                                                                                                                                           MEDLINE=82262043;
                                                                                                                                                                                                                                                                                                                                                                                                                                  Biochim. Biophys. Acta 670:243-254(1981)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Metz-Boutigue M.-H., Mazurier J., Jolles J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MEDLINE=85076667;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Powell M.J., Ogden J.E.;
"Nucleotide sequence of human lactoferrin cDNA.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE OF 3-711
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Proc. Natl. Acad.
                                                                                                                                                                                                                                                                                                                                    lactotransferrin.
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                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE OF 609-711
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                                                     -RAY CRYSTALLOGRAPHY (2.8 ANGSTROMS),
                                                                                                                                                                                                                                                                                                                        Lett. 142:107-110(1982)
                                                                                                                                                                                                                          70:989-993(1987).
                                                                                   (MAR-1997) to the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Res. 18:4013-4013(1990)
                                           PubMed=2585506;
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                                                        AND REVISIONS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDLINE=99192677; PubMed=10089508; G.E., Thomas D.H., Baker E.N.; Jameson G.B., Anderson B.F., Norris G.E., Thomas D.H., Baker E.N.; "Structure of human apolactoferrin at 2.0-A resolution. Refinement and analysis of ligand-induced conformational change."; Acta Crystallogr. D 54:1319-1335(1998).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Klintworth G.K., Sommer J.R., Obrian G., Han L., Ahmed M.N., Qummslych M.B., Lin p.-Y., Basti S., Reddy M.K., Kanai A., Hotta Y., Sugar J., Kumaramanickavel G., Munier F., Schorderet D.F., El Matri L., Iwata F., Kaiser-Kupfer M., Nagata M., Nakayasu K., Hejtmancik J.F., Teng C.T., Hejtmancik J.F., Teng C.T.; Schordered D.F., Teng C.T.; Corneal dystrophy). exclusion of linkage to lactoferrin gene.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         X-RAY CRYSTALLOGRAPHY (2.2 ANGSTROMS).
MEDLINE=99190892; PubMed=10089347;
Sun X.L. Baker HM., Shewry S.C., Jameson (
"Structure of recombinant human lactoferrin"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDLINE=99091914;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MRDIJINE-91166929; PubMed=1369293;
Tani F., Tio K., Chiba H., Yoshikawa M.;
"Isolation and characterization of opioid antagonist peptides
from human lactoferrin.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Biochemistry 36:341-346(1997).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Nicholson H., Anderson B.F., Bland T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        "Structure of human diferric lactoferrin refined at 2.2-A resolution.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            X-RAY CRYSTALLOGRAPHY (2.2 ANGSTROMS).
Haridas M., Anderson B.F., Baker E.N.;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CHARACTERIZATION OF LACTOFERROXINS.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Acta Crystallogr. D 55:403-407(1999).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "Mutagenesis of the histidine ligand in human
                                                                                                                                                                                                                                                                                                                                                      FUNCTION: TRANSFERRINS ARE IRON BINDING TRANSPORT PROTEINS WHICH CAN BIND TWO ATOMS OF FERRIC IRON IN ASSOCIATION WITH THE BINDING OF AN ANION, USUALLY BICARBONATE.
FUNCTION: LACTOFERROXINS A, B AND C HAVE OPIOID ANTAGONIST ACTIVITY. LACTOFERROXIN A SHOWS PREFERENCE FOR MU-RECEPTORS, WHILL LACTOFERROXIN B AND C HAVE SOMEWHAT HIGHER DEGREES OF PREFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mol. Biol. 209:711-734(1989).
                                                                                                                                                                                                                                                            DOMAIN: Composed of two homologous domains. SIMILARITY: Belongs to the transferrin family.
                                                                                                                                                                                                                                                                                                  SUBCELLULAR LOCATION: Secreted.
                                                                                                                                                                                                                                                                                                                                        FOR KAPPA-RECEPTORS THAN FOR MU-RECEPTORS.
                                      U07643;
M93150;
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                                                                          X53961;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Biol. Chem. 54:1803-1810(1990).
CAA37914.1; -.; AAB60324.1; -.; AAA36159.1; -.; AAA59511.1; -.; AAA58656.1; -.;
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Matches 10
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PDB; 1CE2; 19-MAR-99.
PDB; 1BIY; 13-JAN-99.
InterPro; IPR001156; Transferrin.
Pfam; PF00405; transferrin; 2.
PRINTS; PR00422; TRANSFERRIN.
                                                                                                                                    Pfam; PF00400; TRANSFERRAL...
PRINTS; PR00422; TRANSFERRI...
SMART; SM00094; TR FER; 2.
PROSITE; PS00206; TRANSFERRIN_2; 2.
PROSITE; PS00206; TRANSFERRIN_2; 2.
PROSITE; PS00207; TRANSFERRIN_3; 2.
PROSITE; PS00207; TRANSFERRIN_3; 2.
          Transport; Iron transportssignal; 3D-structure.
Signal; 3D-structure.
SIGNAL 1 0 708
CHAIN 20 708
DISULFID 28 55
DISULFID 38 55
DISULFID 134 217
DISULFID 176 192
DISULFID 179 2002
DISULFID 189 200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is nor removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE-20003130; PubMed-10531476;

Karthikeyan S., Paramasivam M., Yadav S., Srinivasan A., Singh T.P.;

"Structure of buffalo lactoferrin at 2.5-A resolution using crystals
grown at 303 K shows different orientations of the N and C lobes.",

Acta Crystallogr. D 55:1805-1813(1999).

I-FUNCTION: TRANSFERRINS ARE IRON BINDING TRANSPORT PROTEINS WHICH
CAN BIND TWO ATOMS OF PERRIC IRON IN ASSOCIATION WITH THE BINDING
OF AN ANION, USUALLY BICARBONATE.

SUBCLIQUAR LOCATION: Secreted.

SUBCLIQUAR LOCATION: Secreted.

SUBCILIULAR LOCATION: Secreted.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A.

PATAMASIVAM M., Thattaliyath B.D., Kumar A., & Singh T.P.;

"CDNA sequence of Buffalo lactoferrin.",
Submitted (JUN-1998) to the EMBL/GenBank/DDBJ
[2]
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15-JUL-1999
10-OCT-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Bubalus bubalis (Domestic water buffalo).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovoidea;
Bovidae; Boyinae; Bubalus.
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l Similarity 90.9%;
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(Rel. 38, Last sequence update)
(Rel. 42, Last annotation update)
errin precursor (Lactoferrin).
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359 ARRARVVW 366

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Conservative
                                                                                                    72.0%;
                                                                           Score 36; DB
Pred. No. 15;
0; Mismatches
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RESULT 3

IDH RADIT

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                                                                                                                                                                                                     Hydrolase; SIGNAL
                                                                                                                                                                                                                      HRSSP; P28403; ALDO-

InterPro; IPR001360; Glyco_hydro_1; 5.

Pfam; PP00232; Glyco_hydro_1; 5.

PRINTS; PR00131; GLHYDRLASE1.

ProDom; PD000650; Glycos_hydro_1; 4.

PROSITE; PS00572; GLYCOSYL_HYDROL_F1_1; 2

PROSITE; PS00653; GLYCOSYL_HYDROL_F1_2; 3

Hydrolase; Glycosidase; Zymogen; Signal;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A., AND PARTIAL SEQUENCE.
STRAIN-New Zealand white;
MEDLINE-89030634; PubMed=2460343;
Mantei N., Villa M., Enzler T., Wacker H., Boll W., James P.,
Hunziker W., Semenza G.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LPH RABIT
P09849;
                                               DOMAIN
DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its modelified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EMBL; X07995; CAA30802.1; -. PIR; S01169; S01169. HSSP; P26205; ICBG.
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01-MAR-1989 (Rel. 10, Last sequence update)
30-MAY-2000 (Rel. 39, Last annotation update)
Lactase-phlorizin hydrolase precursor (Lactase-glycosylceramidase)
[Includes: Lactase (EC 3.2.1.108); Phlorizin hydrolase (EC 3.2.1.62)].
LCT OR LPH.
                                                                                                                                DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               "Complete primary structure of human and rabbit lactase-phlorizin hydrolase: implications for biosynthesis, membrane anchoring and evolution of the enzyme."; EMBO J. 7:2705-2713(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Oryctolagus cuniculus (Rabbit).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Lagomorpha; Leporidae; Oryctolagus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINE=92406791; PubMed=1388157;
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SUBCELLULAR LOCATION: Type I membrane protein. Brush border.

TISSUE SPECIFICITY: Intestine.

DOWALIN: THE SEQUENCE EXHIBITS 4 REGIONS (I-IV) OF INTERNAL HOMOLOGY; THEREFORE LPH MIGHT HAVE EVOLVED BY TWO CYCLES OF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PARTIAL GENE DUPLICATION.
SIMILARITY: Belongs to family 1 of glycosyl hydrolases.
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                                         BETA-GLUCOSIDASE.
LACTASE - PHIORIZIN HYDROLASE.
EXTRACELLULAR (POTENTIAL).
POTENTIAL.
CYTOPLASMIC (POTENTIAL).
4 X APPROXIMATE REPEATS.
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Hal; Transmembrane; Repeat.
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RESULT
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A Boll W., Wagner P., Mantei N.;

The Boll W., Wagner P., Mantei N.;

The Structure of the chromosomal gene and cDNAs coding for lactase-
ty phlorizin hydrolase in humans with adult-type hypolactasia or

persistence of lactase.";

Am. J. Hum. Genet. 48.889-902(1991).

C -!- CATALYTIC ACTIVITY: Lactose + H(2)O = D-glucose + D-galactose.

C -!- CATALYTIC ACTIVITY: Glycosyl-N-acylsphingosine + H(2)O = a sugar +

C -!- CATALYTIC ACTIVITY: Glycosyl-N-acylsphingosine + H(2)O = a sugar +

C -!- SUBCELULAR LOCATION: Type I membrane protein. Brush border.

C -!- TISSUE SPECIFICITY: Intestine.

C -!- TISSUE SPECIFICITY: Intestine.

C -!- TISSUE SPECIFICITY: Intestine.

C -!- TISSUE SPECIFICITY: INTESTINE A REGIONS (I-IV) OF INTERNAL HOWOLOGY; THEREFORE LPH MIGHT HAVE EVOLVED BY TWO CYCLES OF PARTIAL GENE DUPLICATION.

C -!- DOMAIN: THE SEQUENCE EXHIBITS 4 REGIONS (I-IV) OF INTERNAL HOWOLOGY; THEREFORE LPH MIGHT HAVE EVOLVED BY TWO CYCLES OF PARTIAL GENE DUPLICATION.

C -!- DISEASE: Defects in the upstream vicinity of LCT are the cause of disaccharide intolerance III [MIN:223100]; also known as adult disaccharide intolerance III [MIN:2323100]; also known as adult populations the activity of LCT declines in adults, leading to adult-type hypolactasia. In many human populations the activity of LCT declines in adults, leading to activity persists.
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                                          use by non-profit institutions a modified and this statement is not
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01-MAR-1989
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   "Complete primary structure of human and rabbit lactase-phlorizin hydrolase: implications for biosynthesis, membrane anchoring and evolution of the enzyme."; pmBO J. 7:2705-2713(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.
MEDLINE=89030634; PubMed=2460343;
Mantei N., Villa M., Enzler T., Wacker H., Boll
Hunziker W., Semenza G.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Homo sapiens (Human).
Eukaryota; Metazoa; Chordata;
Mammalia; Eutheria; Primates;
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10-OCT-2003 (Rel. 42, Last annotation update)
Lactase-phiorizin hydrolase precursor (Lactase-glycosylceramidase)
[Includes: Lactase (EC 3.2.1.108), Phlorizin hydrolase (EC 3.2.1.62)].
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LPH
                                                     s SWISS-PROT entry is copyright. It is produced through a cween the Swiss Institute of Bioinformatics and the EMBL Buropean Bioinformatics Institute. There are no restrict by non-profit institutions as long as its content is
                                                                                                                                  activity persists.
SIMILARITY: Belongs to family 1 of glycosyl hydrolases.
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            requires a license agreement (S
an email to license@isb-sib.ch).
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PROTON DONOR

NUCLEOPHILE.

PROTON DONOR

NUCLEOPHILE.
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                                          removed.
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RESULT 5
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YES2 MYCLE
STANDARD; PRT; 392
AC Q49682;
DT 15-JUL-1998 (Rel. 36, Created)
DT 15-JUL-1998 (Rel. 36, Last sequence upda
DT 28-FEB-2003 (Rel. 41, Last annotation up
DE Hypothetical protein ML0594.
GN ML0594 OR MLC536.27C OR U1496A OR B1496
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Matches
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GO; GO:0005624; C:membrane fraction; TAS.
GO; GO:0000652; F:lactase activity; TAS.
InterPro; IPR001360; Glyco hydro 1.
Pfam; PF00232; Glyco hydro 1; 4.
PRINTS; PR00131; GLHYDRALSE1.
PRODUM; PD000650; Glyco hydro 1; 4.
PROSITE; PS00572; GLYCOSYL HYDROL F1 1; 2.
PROSITE; PS00653; GLYCOSYL HYDROL F1 2; 3.
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EMBL; M61838; AAA59500
EMBL; M61838; AAA59500
EMBL; M61839; AAA59500
EMBL; M61841; AAA59500
EMBL; M61841; AAA59500
EMBL; M61842; AAA59500
EMBL; M61844; AAA59500
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EMBL; M61849; AAA59500
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SIGNAL
                          Mycobacterium leprae.
Bacteria; Actinobacteria;
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MIM; 223100;
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EMBL;
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cteria; Actinobacteridae; Actinomycetales; Mycobacteriaceae; Mycobacterium.
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NUCLEOPHILE (BY SIMILARITY).

PROTON DONOR (POTENTIAL).

NUCLEOPHILE (BY SIMILARITY).

V > 1 (IN REF. 2).

N -> 8 (IN REF. 2).

NM; FA748640B9A35A6F CRC64;
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Pred. No. 39;
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1C 099NHZ;
1C 099NHZ;
DT 10-OCT-2003 (Rel. 42, Created)
DT 10-OCT-2003 (Rel. 42, Last sequence update)
DT 10-OCT-2003 (Rel. 42, Last sequence update)
DT 10-OCT-2003 (Rel. 42, Last annotation update)
DE Partitioning-defective 3 homolog (PARD-3) (PAR-3) (Atypical PKC 1sorype-specific interacting protein) (ASIP) (Ephrin interacting protein) (PHIP).

Trotein) (PHIP).
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Best Local
"The carboxyl terminus binding motif.";
J. Biol. Chem. 274:3726
                                                                                SEQUENCE FROM N.A. (ISOFORM 3).
STRAIN-NIH Swiss; TISSUB-Embryo;
MEDLINE=991211117; PubMed=9920925;
Lin D., Gish G.D., Songyang Z., Pawson T.;
"The carboxyl terminus of B class ephrins constitutes a PDZ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDLINE=21128732; PubMed=11234002;
Cole S.T., Eiglmeier K., Parkhill J., James K.D., Thomson N.R.,
Wheeler P.R., Honore N., Garnier T., Churcher C., Harris D.,
Whngall K., Basham D., Brown D., Chillingworth T., Connor R.,
Mungall K., Bevlin K., Duthoy S., Feltwell T., Fraser A., Hamlin N.,
Holroyd S., Hornsby T., Jagels K., Lacroix C., MacLean J., Moule S.,
Murphy L., Oliver K., Quail M.A., Rajandream M.A., Rutherford K.M.,
Rutter S., Seeger K., Simon S., Simmonds M., Skelton J., Squares R.,
Squares S., Stevens K., Taylor K., Whitehead S., Woodward J.R.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
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Nature 409:1007-1011(2001).
-!- SIMILARITY: Belongs to the UPF0051 (ycf24) family.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   InterPro; IPR000825; UPF0051.
Pfam; PF0,458; UPF0051; 1.
Hypothetical protein; Complete proteome.
SEQUENCE 392 AA; 42202 MW; 891162F7CA494C6A CRC64;
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Barrell B.G
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EMBL; U00013;
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                                 Chem. 274:3726-3733(1999)
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Pred. No. 13;
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                                                                                                                                                                                                                                                                                                                                                                                                             MEDLINE=21340266; PubMed=11447115;
Ebnet K., Suzuki A., Horikoshi Y., Hirose T.,
Meyer zu Brickwedde M.-K., Ohno S., Vestweber D.;
"The cell polarity protein ASIP/PAR-3 directly associates with
junctional adhesion molecule (JAM).";
           EMBL; AY026057; AAK07669.1; -. HSSP; Q12923; 3PDZ.
                                                         or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Nat. Cell Biol. 2:531-539(2000).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Lin D., Edwards A.S., Fawcett J.P., Mbamalu "A mammallan PAR-3-PAR-6 complex implicated signalling and cell polarity.";
Nat. Cell Biol. 2:540-547(2000).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A. (ISOFORMS 1; 2 AND 3), SUBCELLULAR LOCATION, PHOSPHORYLATION BY PRKCZ, INTERACTION WITH PRKCI AND PARD6A, SUBUNIT OF A COMPLEX CONTAINING PARD6A AND CDC42, AND MUTAGENESIS OF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEDLINE=21828709; PubMed=11839275; Gao L., Joberty G., Macara I.G.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EMBO J. 20:3738-3748(2001).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   INTERACTION WITH F11R. MEDLINE=21340266; Pub
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE=20394297; PubMed=10934475;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 824-SER--SER-826.
STRAIN=NIH Swiss;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         JODERTY G., Petersen C., Gao L., Macar
"The cell-polarity protein Par6 links
" to Care" "
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MEDLINE=20394296; PubMed=10934474;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                "Assembly of epithelial tight junctions is negatively regulated by
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            INTERACTION WITH F11R AND PARD6B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NTERACTION WITH PARD6B, AND SUBUNIT OF A COMPLEX CONTAINING PARD6B;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                to Cdc42
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FUNCTION: Adapter protein involved in asymetrical cell division and cell polarization processes. Plays a role in the formation cell polarization processes. Plays a role in the formation cepithelial tight junctions. Association with PARDSE may prevent the interaction of PARD3 with F11k/JAM1, thereby preventing tigh junction assembly. The PARD5-PARD3 complex links GTP-bound Rho small GTPases to atypical protein kinase C proteins. Subunit: Interacts with PARD5A, PARD5B, PRKCI and PRKCZ. Part of complex with PARD5A, or PARD5B, PRKCI or PRKCZ and CDC42 or RACI.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Biol. 12:221-225(2002).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Macara I
                                                                       moved. Usage by and for commercial (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Par3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             and atypical protein kinase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ij,
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     and aPKC
                                                                                                                                    a collaboration
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junction J. Cell S
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elegans
J. Cell
                                 MEDLINE=22040490; PubMed=12045219;
Hirose T., Izumi Y., Nagashima Y.,
Sakai T., Suzuki Y., Yamaraka T.,
"Involvement of ASIP/PAR-3 in the I
                                                                                                         SEQUENCE FROM N.A. (ISOFORI
PHOSPHORYLATION OF SER-827
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Q9Z340;

Q9Z340;

10-OCT-2003 (Rel. 42, Created)

10-OCT-2003 (Rel. 42, Last sequence update)

10-OCT-2003 (Rel. 42, Last annotation update)

Partitioning-defective 3 homolog (PARD-3) (PAR-3) (Atypical PKC isotype-specific interacting protein) (ASIP) (Atypical PKC specific interacting protein)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MOD RES
                                                                                                                                                                                                                                                                        MEDLINE=98437350; PubMed=9763423; Izumi Y., Hirose T., Tamai Y., Hi
                                                                                                                                                                                                                                                                                                                                                                                            Rattus norvegicus (Rat).
Eukaryota; Metazoa; Chordata;
Mammalia; Eutheria; Rodentia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PROSITE; PS50106; PDZ; 3.
Cell cycle; Cell division;
Coiled coil; Phosphorylation
                                                                                                                                                                                                                                                         Tabuse
                                                                                                                                                                                                                                                                                                                TISSUE=Fibroblast;
                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A. (ISOFORM 1),
                                                                                                                                                                                                                                                                                                                                                                                                                                                            PARD3 OR PAR3.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MUTAGEN
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DOMAIN
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ; GO:0005913;
; GO:0005515;
; GO:0016337;
                                                                                                                                                                  mi Y., Hirose T., Tamai Y., Hirai S.-I., Nagashima Y., Fujimoto T., use Y., Kemphues K.J., Ohno S.; atypical PR directly associates and colocalizes at the epithelial ht junction with ASIP, a mammalian homologue of caenorhabditis gans polarity protein PAR-3."; Cell Biol. 143:95-106(1998).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       3 AARARVVW 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity 6; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           protein) (ASBP).
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271 359
461 546 p
590 677 p
712 936 I
980 1038 I
1046 1078 C
11145 1118 C
11145 1218 C
11145 1295 C
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115:2485-2495 (2002)
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P:cell-cell adhesion; IC.
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                                                                                                                                   (ISOFORM 2),
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/FTId=VSP
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PHOSPHORYLATION (BY SIMILARITY).
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Sciurognathi; Muridae;
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W; AF67825C66DCFE86 C
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INTERACTS WITH
                                                    Y., Tamai-Nagai Y., F
T., Suzuki A., Mizuno
                                                                                                                                                                                                                                                                                                                                     AND
                                                                                                                                   SUBCELLULAR LOCATION,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mismatches
                                   promotion of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1337
                                                                                                                                                                                                                                                                                                                                   INTERACTION WITH
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P_007473.
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                                                                       ٧.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  <u>,,</u>
                               Y., Kurihara H., izuno K., Ohno S.; epithelial tight
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 1333;
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                                                                                                                                                                                                                                                                                                                                                                                          Euteleostomi;
; Murinae; Rattus.
                                                                                                                                                                                                                                                                                                                                     PRKCI AND PRKCZ
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Matches 6
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-i- SUBCELLUAR LOCATION: Cytoplasmic; membrane associated. Localized along the cell-cell contact region. Colocalizes with PRKCZ at the apical edge of tight junctions.

-i- ALTERNATIVE PRODUCTS:

Event=Alternative splicing; Named isoforms=2;

Name=1; Synonyms=180 kDa;

IsoId=092340-1; Sequence=Displayed;

Name=2; Synonyms=150 kDa;

IsoId=092340-2; Sequence=VSP 007475;

IsoId=092340-1; Sequence=vSP 007475;

IsoId=092340-1; Sequence=vSP 007475;

IsoId=092340-1; Sequence=vSP 007475;

                                                                                                                                                             SEQUENCE
                                                                                                                                                                                                                    DOMAIN
MOD_RES
                                                                                                                                                                                                                                                             DOMAIN
DOMAIN
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DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pfam; PF00595; PDZ; 3. SMART; SM00228; PDZ; 3.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                DOMAIN
DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EMBL; AB005549; BAA34216.1; PIR; T13948; T13948.
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                                                                                                                                                                                               VARSPLIC
                                                                                                                                                                                                                                                                                                                                                               DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PROSITE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              issp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          nterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              and cell polarization processes. Seems to play a central role the formation of epithelial tight junctions. Association with PARD6B may prevent the interaction of PARD3 with FIRM/JAM1, thereby preventing tight junction assembly. The PARD3 complex links GTP-bound Rho small GTPases to atypical protein kinase C proteins.

SUBUNIT: Interacts with PARD6A, PARD6B and FIIR/JAM1 via its I domain (By similarity). Interacts with PARD6A or PARD6B, PRKCI or PRKCZ and CDC42 or RACI (By similarity).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FUNCTION: Adapter protein involved in asymetrical cell
                                                                                                                                                                                                                                                                                                                                                                                                                                         ITE; PS50106; PDZ; 3.
cycle; Cell division;
347
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Q12923; 3PDZ.
Pro; IPR001478;
                                        w
                                                                                                                                                                                                                                                                                                                                                                                                                        coil;
                                                                          Similarity 6; Conserv
AMRARVIW 354
                                        AARARVVW 10
                                                                                                                                                           1337
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1050
1149
1199
1278
827
                                                                                                                                                                                                                                                                                                                                     1; Phosphorylation;
271 359 p
461 546 p
590 677 p
712 936 I
                                                                            Conservative
                                                                                                                                                           AA;
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546
677
936
1042
11082
1172
1222
1229
1299
                                                                                               70.0%;
                                                                                                                                                           149448
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COILED COIL (POTENTIAL).
COILED COIL (POTENTIAL).
COILED COIL (POTENTIAL).
COILED COIL (POTENTIAL).
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                                                                                               Score 35;
Pred. No.
                                                                                                                                                         Missing (in isoform 2).
/FTId=VSP_007475.
W; EC980C5106B52F9C CRC64;
                                                                                                                                                                                                                    PHOSPHORYLATION
                                                                                                                                                                                                                                                                                                                                          INTERACTS WITH
                                                                                                                                                                                                                                                                                                                                                                                                                      Alternative
                                                                          Mismatches
                                                                                                 43;
                                                                                                                  DB
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                                                                                                                                                                                                                                                                                                                                          PRKCZ (PROBABLE).
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ral role in
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PRKCZ
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RESULT 8
TRFL_HORSE

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EMBL; AJ010930; CAA09407.1; -.
pDB; 1B1X; 02-DEC-98.
PDB; 1B170; 02-EB-99.
PDB; 1B7Z; 02-PEB-99.
PDB; 1F9B; 10-FEB-01.
PDB; 116B; 13-FEB-02.
PDB; 1QJW; 14-JAN-00.
InterPro; IPR001156; Transferrin.
InterPro; IPR001156; Transferrin.
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077811;
15-JUL-1999
15-JUL-1999
10-OCT-2003
Transport;
Signal; 3D
NON TER
SIGNAL
CHAIN
REPEAT
REPEAT
DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          resolution.";

J. Mol. Biol. 289:303-317(1999).

J. Mol. Biol. 289:303-317(1999).

FUNCTION: TRANSFERRINS ARE IRON BINDING TRANSPORT PROTEINS WHICH CAN BIND TWO ATOMS OF FERRIC IRON IN ASSOCIATION WITH THE BINDING OF AN ANION, USUALLY BICARBONATE.

J. SUBCULIT: MODORMET.

J. SUBCULIULAR LOCATION: Secreted.

J. SUBCULIULAR LOCATION: Secreted.

J. DOMAIN: Composed of two homologous domains.

J. SIMILARITY: Belongs to the transferrin family.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINE=99296631; PubMed=10366507;
Sharma A.K., Paramasivam M., Srinivasan A., Yadav M.P., Singh T.P.;
"Three-dimensional structure of mare diferric lactoferrin at 2.6-A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A.

Paramasivam M., Srinivasan A., Yadav M.P., Singh T.P.;

"cDNA sequence of mare lactoferrin.";

Submitted (SEP-1998) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Equus caballus (Horse).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Perissodactyla; Equidae; Equus.
                                                                                                                                                                                                                                       PRINTS; PR00422; TRANSFERRIN.
SMART; SM00094; TR FER; 2.
PROSITE; PS00205; TRANSFERRIN 1; 2.
PROSITE; PS00206; TRANSFERRIN 2; 2.
PROSITE; PS00207; TRANSFERRIN 3; 1.
Transport; Iron transport; Glycoprotein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                       This SWISS-PROT entry is copyright. It is produced through a collaborate between the Swiss institute of Bioinformatics and the EMEL outstati the European Bioinformatics Institute. There are no restrictions on use by non-profit institutions as long as its content is in no modified and this statement is not removed. Usage by and for commert entities requires a license agreement (See http://www.isb-sib.ch/annou or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    15-UUL-1999 (Rel. 38, Created)
15-UUL-1999 (Rel. 38, Last seq
10-CCT-2003 (Rel. 42, Last ann
Lactotransferrin precursor (La
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                                                                                                                                                                                                                                                                                                                        PF00405; transferrin;
                                                                                                                                                                                                                          3D-structure.
STANDARD;
sequence update)
annotation update)
(Lactoferrin) (Fragment)
                                                                                                                                                          LACTOTRANSFERRIN

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12 1 (VIA A)

13 2.

13 2 (VIA A)

13 2 (VIA A)

14 2 (VIA A)

15 2 (VIA A)

16 (GLCNAC C)

17 (GLCNAC C)
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LTF.
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9; Conserv
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                  precursor
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                   (Lactoferrin)
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Pred. No. 29;
0; Mismatches
                                 update)
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        Strausberg R.D., Feingold E.A., Grouse L.H., Derge J.G.,

Aklausner R.D., Collins F.S., Wagner L., Schenmen C.M., Schuler G.D.,

Aklausner R.D., Zeeberg B., Buetow K.H., Schaefer C.F., Bhat N.K.,

Aklausner R.D., Zeeberg B., Buetow K.H., Schaefer C.F., Bhat N.K.,

Aklausner R.D., Zeeberg B., Buetow K.H., Schaefer C.F., Bhat N.K.,

Aklausner R.D., Wordan H., Moore T., Max S.I., Wang J., Hsieh F.,

Aklausner R.D., Wordan H., Moore T., Max S.I., Wang J., Hsieh F.,

Aklausner R.D., Wordan H., Moore T., Rubin G.M., Hong L.,

Brownstein M.J., Usdin T.B., Toshiyuki S., Carninci P., Prange C.,

Aklausner R.D., Worden R.D., Mordan R.D., Mullahy S.J.,

Aklausner R.D., Worden R.D., Mordan R.D., Mullahy S.J.,

Aklausner R.D., Worden R.D., Malek J.A., Gunaratne P.H.,

Aklausner R.D., Worley K.C., Hale S., Garcia A.M., Gay L.J., Hulyk S.W.,

Villalon D.K., Muzny D.M., Sodergran B.J., Lu X., Gibbs R.A.,

Villalon D.K., Muzny D.M., Sodergran B.J., Lu X., Gibbs R.A.,

Villalon D.K., Muzny D.M., Sodergran B.J., Lu X., Gibbs R.A.,

Villalon D.K., Muzny D.M., Sodergran B.J., Lu X., Gibbs R.A.,

Villalon D.K., Muzny D.M., Sodergran B.J., Lu X., Gibbs R.A.,

Villalon D.K., Muzny D.M., Sodergran B.J., Lu X., Gibbs R.A.,

Villalon D.K., Muzny D.M., Sodergran B.J., Lu X., Gibbs R.A.,

Villalon D.K., Muzny D.M., Sodergran B.J., Lu X., Gibbs R.A.,

Rahey J., Helton E., Ketteman M., Madan A., Rodrigues S., Sanchez A.,

Aklausner R.D., Schmutz J., Myers R.M.,

Butterfield Y.S.N., Krzywinski M.I., Skalska U., Smailus D.E.,

Brown and initial analysis of more than 15,000 full-length

Thuman and mouse cDNA sequences.",

Proc. Natl. Acad. Sci. U.S.A. 99:16899-16903(2002).
                                                         EMBL; J03298; AAA40525.1; --
EMBL; B8510; BAA13633.1; --
EMBL; BRO06904; AAH06904.1; --
EMBL; M74778; AAA39427.1; --
EMBL; M74778; DAA39427.1; --
HSSP; P02788; 1CB6
MGD; MGL;96837; LLEf
InterPro; IPR001156; Transferrin.
                                                                                                                                                                                                                                                                  MEDLINE=87280033; PubMed=3611056; Pentecost B.T., Teng C.T.; "Lactotransferrin is the major es uterine secretions."; J. Biol. Chem. 262:10134-10139(19
                                                                                                                                                              This SWISS-PROT entry is copyright. It is produced through a collable between the Swiss Institute of Bioinformatics and the EMBL outst the European Bioinformatics Institute. There are no restrictions use by non-profit institutions as long as its content is in modified and this statement is not removed. Usage by and for comentities requires a license agreement (See http://www.isb-sib.ch/ar or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mus musculus (Mouse).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
NCBI_TaxID=10090;
[1]
[1]
SEQUENCE FROM N.A.
Pfam; PF00405; transferrin; 2.
PRINTS; PR00422; TRANSFERRIN.
SMART; SM00094; TR FER; 2.
PROSITE; PS00205; TRANSFERRIN_1; 1.
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Feingold E.A., Grouse L.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       to the EMBI/GenBank/DDBJ databases.
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RESULT 10
ENV FIV72 STANDARD; PRT; 855 AA.
AC Q02282;
DT 01-JUL-1993 (Rel. 26, Created)
DT 01-JUL-1993 (Rel. 26, Last sequence update)
DT 16-OCT-2001 (Rel. 40, Last annotation update)
DE ENV polyprotein precursor (GP150 polyprotein)
DE GP100; Glycoprotein GP36].
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TRANSFERRIN_3; 2.
ransport; Glycoprotein; Metal-binding; Repeat;
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MR -> IQG (IN REF. 1).
R -> Q (IN REF. 2).
M -> L (IN REF. 2).
S -> T (IN REF. 2).
A -> D (IN REF. 1).
E -> Q (IN REF. 2).
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Pred. No. 37;
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CARBONATE 2
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RON 1 (BY SIMILARITY).

RON 1 (BY SIMILARITY).

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ЛВ)
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(VIA AMIDE NITROGEN)
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Best Local &
Matches
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                                                                             CARBOHYD
SEQUENCS
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                                                                                                                                                                                                                                                                                                                                                                           Pfam; PF00429;
Coat protein; F
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            immunodeficiency virus isolates.";
Arch. Virol. 123:29-45(1992).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Veline immunodeficiency virus (isolate TM2) (FIV).
Viruses; Retroid viruses; Retroviridae; Lentivirus
NCBI_TaxID=31676;
[1]
                                                                                                                                                                                             CARBOHYD
                                                                                                                                                                                                                                                                                                                 CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                          PIR; F45557; F45557.
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                                                                                                                                                                                                                                                                                                                                                                                                                                      entities requires a license agreement (S or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MEDLINE=91303718; PubMed=1649349;
Kiyomasu T., Miyazawa T., Furuya T.,
Sakuragi J.I., Fukasawa M., Maki N.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    'Identification of feline immunodeficiency virus rev gene activity.";
J. Virol. 65:4539-4542(1991).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Adachi A.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                               nterPro;
  170
                    N
                                      Similarity 6; Conser
LGARAQVVW
                    VAARARVVW
                                                                                                                                                                                                                                                                                                                                                                                      IPR002050; Env_polyprotein.
0429; ENV_polyprotein; 1.
                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                            Polyprotein;
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T., Fukasawa M.,
 178
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N-LINKED (GLCNAC...
N-LINKED (GLCNAC...
W; BC2DFABB6245D70D C
                                      Score 34; DB
Pred. No. 45;
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Hasegawa A., Mikami
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REP2
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MAZ4_SO
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Best Local S
Matches 6
                                                                  P03066; Q47411;
21-JUL-1986 (Rel
21-JUL-1986 (Rel
30-MAY-2000 (Rel
Replication init
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       dissimilar multiallelic homeodomain proteins.";

Proc. Natl. Acad. Sci. U.S.A. 89:7169-7173 (1992).

-i- FUNCTION: SPECIFIES A-ALPHA-4 MATING-TYPE. MAY REGULATE THE EXPRESSION OF GENES SPECIFIC TO THE HOMOKARYOTIC CELL TYPE.

-i- SUBCELLULAR LOCATION: Nuclear.

-i- DEVELOPMENTAL STAGE: Expressed constitutively in homokaryon:

-i- SIMILARITY: Belongs to the TALE/M-ATYP homeobox family.

-i- SIMILARITY: Contains 1 homeobox domain.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              01-0CT-1994
01-0CT-1994
10-0CT-2003
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE FROM N.A.
STRAIN-CBS 340.81 / UVM 4-40;
MEDLINE-92357793; PubMed=1353886;
Stankis M.M., Specht C.A., Yang H
Novotny C.P.;
"The A alpha mating locus of Schi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SCHCO
                                                                                                                                                        REP2
                                                                                                                                                                                                                                                                                                                                                     PROSITE; PS00027; HOMEOBOX_1; FALSE_NEG.
PROSITE; PS50071; HOMEOBOX_2; FALSE_NEG.
HOMEOBOX; DNA-binding; Transcription regulation; Nuclear protein.
HOMEOBOX (TALE-TYPE).
DNA_BIND 110 182 HOMEOBOX (TALE-TYPE).
DOMAIN 370 402 ASP/GLU-RICH (ACIDIC).
DOMAIN 436 469 ASP/GLU-RICH (ACIDIC).
Enterobacteriaceae;
NCBI_TaxID=562;
                                       Escherichia coli.
Plasmid IncFII R100,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PIR; D37271; D37271.
InterPro; IPR008422; Coprinus_mating
InterPro; IPR001356; Homeobox.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mating-type protein A-alpha Z4.
Schizophyllum commune (Bracket fungus).
Schizophyllum commune (Bracket fungus).
Eukaryota, Fungi, Basidiomycota, Hymenomycetes;
Agaricales; Schizophyllaceae; Schizophyllum.
                           Bacteria;
                                                                                                                                                                                                                                                                                                                                            SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EMBL; M97181; AAB01372.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NCBI_TaxID=5334;
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                                                                                                                                                                                                                                                      2 VAARARVVW
                                                                                                                                                                                                                                                                                  Similarity 6; Conserv
                                                                                                                                                                                                                            IAARARMGW
                           Proteobacteria;
                                                                                                                                                                                                                                                                                                                                         370
436
940 AA;
                                                                              (Rel. 01, Created)
(Rel. 01, Last sequence up
(Rel. 39, Last annotation
initiation protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (Rel. 30, Created)
(Rel. 30, Last sequence up
(Rel. 42, Last amotation
                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                      STANDARD;
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             Escherichia
                                                                                                                                                                                                                                                                                              68.0%;
66.7%;
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                                        Plasmid IncFII
                           Gammaproteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        of Schizophyllum
                                                                                                                                                                                                                                                                                 Score 34; DB Pred. No. 49; 2; Mismatches
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                                        R1,
                                                                                                              update)
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                                        and Plasmid IncFII NR1
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                         Enterobacteriales;
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SEQUENCE FROM N.A.

PLASMID=IncHI R100;

C PLASMID=IncHI R100;

WEDLINE=81074309; PubMed=7003300;

RT "Genes and sites involved in replication and incompatibl?

RT R100 plasmid derivative based on nucleotide sequence ana nol. Gen. Genet. 179:527-537(1980).
          PAR BERTHER REPRESENTATION OF THE PROPERTIES OF A PROPERTIES O
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"In-vivo studies on the cis-acting re
IncFII plasmid NR1.";
J. Mol. Biol. 202:495.
                                                                                                                                 EMBL; J01762; AAA92257.1; ---
EMBL; J01770; -; NOT ANNOTATED C:
EMBL; X12587; CAA31100.1; --
EMBL; X12776; CAA31263.1; --
EMBL; X02302; CAA26168.1; --
EMBL; X02302; CAA26169.1; ALT IN
EMBL; X02302; CAA26169.1; --
EMBL; X02302; CAA26169.1; --
EMBL; X02302; CAA26169.1; --
EMBL; X02302; CAA26169.1; --
EMBL; X02302; CAA26167.1; --
EMBL; X02302; CAA26169.1; --
EMBL; 
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MEDLINE-86319522; Pubmed=3019092;

Ohtsubo H., Ryder T.B., Maeda Y., Armstrong K., Oht
"DNA replication of the resistance plasmid R100 and
Adv. Biophys. 21:115-133(1986).
-I-FUNCTION: This protein is essential for plasmid involved in copy control functions.
-I-SIMILARITY: BELONGS TO THE INCFII REPA FAMILY.
InterPro; IPR003446; Replctn.
Pfam; PF02387; IncFII repA; 1.
Plasmid; DNA replication; Plasmid
CONFLICT 55 55 8 ->
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          This SWISS-PROT entry is copyright. It is produced through a collab between the Swiss Institute of Bioinformatics and the EMBL outst the European Bioinformatics Institute. There are no restrictions use by non-profit institutions as long as its content is in modified and this statement is not removed. Usage by and for comentities requires a license agreement (See http://www.isb-sib.ch/an or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A. PLASMID=IncFII NR1; MEDLINE=88160860; PubMed=2580099;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Womble D.D., Sampathkumar P., Easton A.M., "Transcription of the replication control R-plasmid NRI in vitro and in vivo.", J. Mol. Biol. 181:395-410(1985).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PLASMID=IncFII R100, and IncFII R1;
MEDLINE=81173118; PubMed=6163994;
MEDSOR J., Ryder T., Ohtsubo H., Ohtsubo
"Role of RNA transcripts in replication
number control in antibiotic resistance,
Nature 290:794-797(1981).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE FROM N.A. PLASMID=IncFII NR1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "RepA protein- and orik-dependent initiation of R1 plasmid replication: identification of a rho-dependent transcription terminator required for cis-action of repA protein."; Nucleic Acids Res. 16:6493-5514(1988).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEDLINE=88289416; PubMed=3041379;
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   copy control
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IncFII
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RESULT 13
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Best Local
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Charbit A., Chetouani F., Couve E., de Darwar A., Dehoux P.,
Domann E., Dominguez-Bernal G., Duchaud E., Durant L., Dussurget O.,
Entian K.-D., Fsihi H., Garcia-del Portillo F., Garrido P.,
Gautier L., Goebel W., Gomez-Lopez N., Hain T., Hauf J., Jackson D.,
Jones L.-M., Kaerst U., Kreft J., Kuhn M., Kunst F., Kurapkat G.,
Madueno E., Maitournam A., Mata Vicente J., Ng E., Nedjari H.,
Mordsiek G., Novella S., de Pablos B., Perez-Diaz J.-C., Purcell R.,
Vazquez-Boland J.-A., Voss H., Wehland J., Cossart P.;
Vazquez-Boland J.-A., Voss H., Wehland J., Cossart P.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.
STRAIN=CLIP 11262 / Serovar 6a;
MEDLINE=21537279; PubMed=11679669;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MAS
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PROSITE; E
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Baquero F., Berche
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Bacteria; Firmicutes;
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28-FEB-2003
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28-FEB-2003
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HAMAP; MF_00140; -; 1.

InterPro; IPR002305; tRNA-synt_Ib.

InterPro; IPR001412; tRNA-synt_I.

InterPro; IPR002306; Trp_tRNA-synt_Ib;

Pfam; PF00579; tRNA-synt_Ib; 1.

PRINTS; PR01039; TRNASYNTHTRP.
                                                                                                                                                                                                                                                                                                                                EMBL; AL596171; CAC97529.1; PIR; AI1719; AI1719.
                                                                                                                                                                                                                                                                                                                                                                                               entities requires a license agreement (S or send an email to license@isb-sib.ch).
SEQUENCE
                     BINDING
                                                                                 Complete
                                                                                                             Aminoacyl-tRNA synthetase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         -!- SIMILARITY: Belongs to class-I aminoacyl-tRNA synthetase family.
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                                                                                                                              ; TIGR00233; trps; 1.
PS00178; AA_TRNA_LIGASE_I;
                                                                                      proteome.
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(Rel. 41, Last annotation update)
|-tRNA synthetase (EC 6.1.1.2) (Tryptophan--tRNA ligase)
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197
                     196
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75.0%;
  36975 MW;
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                                                                                                           Frotein biosynthesis; Ligase; ATP-binding;
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Pred. No.
"HIGH" REGION.
"KMSKS" REGION.
ATP (BY SIMILARITY).
6050DC94C9337B73 C
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                                                                                                                                                                                                                                                                                                                                                                                                                    (See http://www.isb-sib
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DB 1;
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    CRC64;
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Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     JIT 14
LISMO
                                                                                                                                                                                                                                                                                                 This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bloinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Glaser P., Frangeul I., Buchrieser C., Rusnick C., Amend A., Baquero F., Berche P., Bloecker H., Brandt P., Chakraborty T., Chakrabit A., Chetouani F., Couve E., de Daruvar A., Dehoux P., Domann E., Dominguez-Bernal G., Duchaud E., Durant L., Dussurget Entian K.-D., Fsihi H., Garcia-del Portillo F., Garrido P., Gautier L., Goebel W., Gomez-Lopez N., Hain T., Hauf J., Jackson Jones L.-M., Kaerst U., Kreft J., Kuhn M., Kunst F., Kurapkat G., Madueno E., Maitournam A., Mata Vicente J., Ng E., Nedjari H., Nordsiek G., Novella S., de Pablos B., Perez-Diaz J.-C., Purcell Remmel B., Rose M., Schlueter T., Simoes N., Tierrez A., Vazquez-Boland J.-A., Voss H., Wehland J., Cossart P.;
                                         SITE
BINDING
SEQUENCE
                                                                                     Complete
SITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               28-FEB-2003 (Rel.
28-FEB-2003 (Rel.
Tryptophanyl-tRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Vazquez-Bóland J.-A., Voss H., Wehland J., Cossart P., "Comparative genomics of Listeria species."; Science 294:849-852(2001)
-i- CATALYTIC ACTIVITY: ATP + L-tryptophan + tRNA(Trp)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NCBI_TaxID=1639;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Listeria monocytogenes
Bacteria; Firmicutes; I
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HAMAP; MF_00140; -; 1.
InterPro; IPR002305; TRNA-synt_I.
InterPro; IPR001412; TRNA-synt_I.
InterPro; IPR002305; Trp_tRNA-synt_1b; 1.
Pfam; Pf00579; tRNA-synt_lb; 1.
PRINTS; PR01039; TRNASYNTHTRP.
                                                                                                                                                                                                                                                                         EMBL; AL591982; CAD00276.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     STRAIN=EGD-e / Serovar 1/2a;
MEDLINE=21537279; PubMed=11679669;
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                                                                                                                                                                                                                                                           PIR; AF1349;
                                                                                                                   Aminoacyl-tRNA synthetase;
                                                                                                                                PROSITE;
                                                                                                                                             TIGREAMS;
                                                                                                                                                                                                                                                                                                                                                                                                                      SIMILARITY: Belongs to class-I aminoacyl-tRNA synthetase family.
                                                                                                                                                                                                                                                                                                                                                                                                                                  diphosphate + L-tryptophanyl-tRNA(Trp).
SUBUNIT: Homodimer (By similarity).
SUBCELLULAR LOCATION: Cytoplasmic.
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                                                                                                                               ; TIGR00233; trpS; 1.
PS00178; AA_TRNA_LIGASE_I; 1.
                                                                                                   proteome.
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196
331 /
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                                            A.
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                              19
197
196
36892 1

    Last sequence update)
    Last annotation update)
    synthetase (EC 6.1.1.2) (Tryptophan--tRNA ligase)

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                                                                                                                   Protein biosynthesis; Ligase; ATP-binding,
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Pred.
 Score
Pred.
                                            "KMSKS" REGION.
ATP (BY SIMILARITY)
; 00BC24AF163A3518
                                                                                       "HIGH" REGION
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   No.
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29;
DB
29;
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               Length 331;
                                               CRC64;
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RA Sgouros J., Peat N., Hayles J., Baker S., Basham D., Bowman S.,
RA Brooks K., Brown D., Brown S., Chillingworth T., Churcher C.M.,
RA Brooks K., Brown D., Brown S., Chillingworth T., Churcher C.M.,
RA Golliss M., Connor R., Cronin A., Davis P., Feltwell T., Fraser A.,
RA Golliss M., Connor R., Cronin A., Davis P., Feltwell T., Fraser A.,
RA Holroyd S., Hornsby T., Howarth S., Huckle E.J., Hunt S., Jagels K.,
A Holroyd S., Hornsby T., Howarth S., Huckle E.J., Hunt S., Jagels K.,
RA Holroyd S., Hornsby T., Howarth S., Huckle E.J., Hunt S., Jagels K.,
RA James K., Jones M., Leather S., McLean J.,
RA Mooney P., Moule S., Mungall K., Murphy L., Niblett D., Odell C.,
RA Mooney P., Moule S., Mungall K., Murphy L., Niblett D., Odell C.,
RA Milperford K., Rutter S., Saunders D., Seeger K., Sharp S.,
RA Ritherford K., Rutter S., Saunders D., Seeger K., Sharp S.,
RA Woodward J., Volckaert G., Aert R., Squares S., Stevens K.,
RA Taylor K., Taylor R.G., Tivey A., Walsh S.V., Warren T., Whitehead S.,
RA Weltjens I., Vanstreels E., Reger M., Schaefer M., Mueller Auer S.,
RA Weltjens I., Vanstreels E., Reger M., Schaefer M., Mueller Auer S.,
RA Gabel C., Fuchs M., Fritzc C., Holzer E., Moestl D., Hilbert H.,
RA Garbard J., Vanstreels E., Reger M., Schaefer M., Mueller S.,
RA Galibert F., Aves S.J., Xiang Z., Hunt C., Moore K., Hurst S.M.,
RA Galibert F., Aves S.J., Xiang Z., Hunt C., Moore K., Hurst S.M.,
RA Galibert F., Aves S.J., Xiang Z., Hunt C., Moore K., Hurst S.M.,
RA Galibert F., McCombie W.R., Paulsen I., Potashkin J.,
RA Dominguez A., Revuelta J.L., Moreno S., Armstrong J., Forsburg S.L.,
RA Dominguez A., Revuelta J.L., Moreno S., Armstrong J., Forsburg S.L.,
RA Dominguez B., Walser D., Barrell B.G., Nurse P.;
"The genome 415:817-880 (2002)

"The genome 415:817-880 (2002)

"The genome 415:817-880 (2002)

"The genome 415:817-80 (2002)
Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                             PIR; T38131; T38131.

GeneDB_SPombe; SPAC20G8.09c; -.

InterPro; IPR007807; DUF699.

Pfam; PF05127; DUF699; 1.

Pfam; PF05127; DUF699; 1.

Pfoministry Protein; ATP-binding; Nuclear protein.

NP_DIND 282
289
ATP (POTENTIAL).

SEQUENCE 1033 AA; 116463 MW; 8432B313D818E135 CI
                                                                                                                                                                                                                                                                                                                                                                                                       This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
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15-JUL-1998 (Rel. 36, Last sequence update)
10-OCT-2003 (Rel. 42, Last annotation update)
Hypothetical UPF0202 protein C20G8.09c in chromosome I.
SPAC20G8.09C.
                                                                                                                                                                                                                                                                                                             EMBL; Z95334; CAB08603.1; -. PIR; T38131; T38131.
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Eukaryota; Fungi; Ascomycota; Schizosaccharomycetes;
Schizosaccharomycetales; Schizosaccharomycetaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE=21848401; PubMed=11859360;
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66.0%;
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Score 33;
Pred. No.
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                                                                                                    (POTENTIAL).
8432B313D818E135 CRC64;
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DB 1;
86;
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--
                                Length 1033;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 문
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Maximum Match 100%
Listing first 45 summaries
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Maximum DB
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Perfect score:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       OM protein - protein search, using sw model
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  1111111
654321098765432
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                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score
                                                                                                                                                                                                                                                                                                                    39
9
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seq length: 2000000000
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50
1 EVAARARVVW 10
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Gapop 10.0 ,
SPTREMBL_25:*
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sp_phage:*
sp_plant:*
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sp_virus:*
sp_vertebrate:*
sp_unclassified:*
sp_rvirus:*
sp_bacteriap:*
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sp_bacteria:*
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sp_mhc:*
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gapext 0
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                         7 QBUOTO
QBITCH2
QBITCH2
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  Q29518
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Compugen Ltd.
                   QBudto pyrococcus
QBtcd2 homo sapien
QBizh6 homo sapien
QBiu92 homo sapien
QBiu92 homo sapien
QBiu92 homo sapien
QBvwa7 bordetella
Q7vwa7 bordetella
Q9v0h2 pyrococcus
Q83h91 tropheryma
Q83h91 tropheryma
Q83h91 tropheryma
Q83h91 tropheryma
Q83h91 pyrochloroco
Q7v497 pyrochloroco
Q7v495 prochloroco
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oryctolagus
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Q8U0T0
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                                                                                                    Query Match
Best Local S
Matches 8
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NCBI_TaxID=2261;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Pyrococcus furiosus.
                                                                                                    Similarity
8; Conserv
                                                  EVAARARVVW 10
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			34		34											(J)											3 5	36
•	٠	٠	•	68.0	٠	•	٠	٠	٠	•	•	•	٠	•	•	70.0	•	•	70.0	•	70.0	•	٠	•	•	٠	•	72.0
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Q8CBA0	Q9KR79	Q7UKJ5	Q82QU8	99648Ö	P74336	066630	Q83ZS0	Q890H7	Q9ABY8	Q9SMP3	Q9ZBN2	Q38071	Q8JIF9	Q9KYF4	Q8BPQ4	gga	Q92XJ5	Q82BH1	Q8UFU2	\sim	Q8RPY8	Q8R8C1	Q82HU3	Q9A6K8	Q7W9R9	Q7WGY9	õ	Q29519
Q8cba0 mus musculu	Q9kr79 vibrio chol	н	strept	Q8p966 xanthomonas	P74336 synechocyst	ດນ	oryn	-	Q9aby8 caulobacter		Q9zbn2 streptomyce	р,	a	Q9kyf4 streptomyce	Q8bpq4 mus musculu	Q8bpq6 mus musculu	rhizobium	str	Q8ufu2 agrobacteri	Q8pq53 xanthomonas	Q8rpy8 rhizobium l	Q8r8c1 thermoanaer			Q7w9r9 bordetella	_	yaa3	Q29519 oryctolagus

ALIGNMENTS

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InterPro; IPR00150; Helicase C.
Pfam; PF00270; DEAD; 1.
Pfam; PF00271; helicase C; 1.
SMART; SM00487; DEXDC; 1.
SMART; SM00490; HELICC; 1.
Helicase; Complete proteome.
SEQUENCE 980 AA; 112588 MW; F2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STRAIN=Vc1 / DSM 3638 / ATCC 43587 / JCM 8422; Weiss R.B., Dunn D.M., Robb F.T., Brown J.R.; Weiss R.B., Dunn D.M., Robb F.T., Brown J.R.; Strain Str
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Q8U0TO; PRELIMINARY; Q8U0TO; O1-JUN-2002 (TrEMBLrel. 21, O1-JUN-2002 (TrEMBLrel. 25, O1-CC-2003 (TrEMB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Large helicase-related protein.
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298
EVATRLRVVW 307
                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                         82.0%;
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                                                                                                                                                                                                                                                                                                                                                    Score 41; DB 17;
Pred. No. 24;
0; Mismatches 2
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            F244EF8F6681C653 CRC64;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 980;
                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               genome.";
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PHONON COLUMN CO
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ORDER
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Best Local
Matches 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sibmitted (FEB-2002) to the EMBL/GenBank/DDBJ databases.

-i- FUNCTION: TRANSFERRINS ARE IRON BINDING TRANSPORT PROTEINS WHITE THE BIND TWO ATOMS OF FEBRIC IRON IN ASSOCIATION WITH THE BIND OF AN ANION, USUALLY BICARBONATE (BY SIMILARITY).

-i- SIMILARITY: BELONGS TO THE TRANSFERRIN FAMILY.

EMBL; BC022347; AAH22347.1; --

GG; GO:0005576; C:extracellular; IEA.

GG; GO:0005879; F:ferric iron binding; IEA.

GG; GO:0006819; F:iron ion transport; IEA.

GG; GO:0006819; F:iron ion transport; IEA.

GG; GO:0006819; F:transferrin.

Pfam; PF00405; Pransferrin.

Pfam; PF00405; Transferrin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     01-MAR-2003
01-MAR-2003
01-OCT-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QSTCD2;
                             domain of human lactoferrin.";
submitted (JUL-2002) to the EMBL/GenBank/DDBJ
EMBL; AY137470; AAN11304.1;
GO; GO:0005576; C:extracellular; IEA.
GO; GO:0008199; F:ferric iron binding; IEA.
GO; GO:0006879; P:iron ion homeostasis; IEA.
GO; GO:00068879; P:iron ion transport; IEA.
InterPro; IPB001156; Transferrin.
                                                                                                                                                                                                                                                                                                         SEQUENCE FROM N.A.
Kaplan J.B., Fine D.H.;
"Characterization of an amino acid polymorphism in the antibacterial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Glycoprotein; Irou 711 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRINTS; PR00422; TRANSFERRIN.

SMART; SM00094; TR FER; 2.

PROSITE; PS00205; TRANSFERRIN 1; 2.

PROSITE; PS00206; TRANSFERRIN 2; 2.

PROSITE; PS00207; TRANSFERRIN 3; 2.

PROSITE; PS00207; TRANSFERRIN 3; 2.

Glycoprotein; Iron transport; Metal-binding; Glycoprotein; Iron transport; Metal-binding; SEQUENCE 711 AA; 78327 MW; 189C7EE097C45
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Strausberg
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Mammalia; Eutheria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          01-JUN-2002
01-OCT-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                          NCBI_TaxID=9606;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Homo sapiens (Human)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Q8IZH6;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Lactoferrin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TISSUE=Prostate;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NCBI_TaxID=9606;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EVAA-RARVVW
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(TrEMBLrel.
(TrEMBLrel.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Chordata;
Primates;
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90.9%;
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Last sequence update)
Last annotation update)
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Pred. No. 34;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Pred. No. 34;
0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Craniata; Vertebrata; Euteleostomi; Catarrhini; Hominidae; Homo.
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Catarrhini;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1B9C7EE097C45FAF
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annotation update)
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RESULT 5
Q8H321
ID Q8H321
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Best Local S
Matches 10
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Best Local :
                                                                                           Matches
                                                                                                                                                                                                                                             EMBL; AY165046; AAN33998.1; EMBL; AY178998; AAN75578.2; GO; GO:0006576; C:extracellul. GO; GO:0008199; F:ferric iron GO; GO:0006879; P:iron ion hot GO; GO:00068866; P:iron ion traces
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Q8IU92;
01-MAR-2003
01-MAR-2003
01-OCT-2003
                                                                                                                                  CHAIN
SEQUENCE
                                                                                                                                                     Signal.
SIGNAL
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SMART; SM00094; TR FER; 2.

PROSITE; PS00205; TRANSFERRIN 1; 2.

PROSITE; PS00206; TRANSFERRIN 2; 2.

PROSITE; PS00207; TRANSFERRIN 3; 2.

PROSITE; PS00207; TRANSFERRIN 3; 2.

SEQUENCE 711 AA; 78396 MW; 547AB9423C27CE67
                                                                                                                                                                                                                  Pfam; PF00405; transferrin; 2 PRINTS; PR00422; TRANSFERRIN.
                                                                                                                                                                                                                                                                                                          "Homo sapiens lactoferrin
Submitted (DEC-2002) to th
                                                                                                                                                                                                                                                                                                                                Baskar Singh
Singh T.P.;
                                                                                                                                                                                                                                                                                                                                                                                                    TISSUE=Mammary gland;
Shi Y.-Q., Zhang Y., Zheng Y.-N
"Homo sapiens Lactotransferrin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Homo sapiens (Human)
Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                                                                                                                                         PROSITE;
                                                                                                                                                                                   PROSITE; PS00206;
                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                       NCBI_TaxID=9606;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Lactotransferrin
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                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A.
                                                                                                                                                                                                                                      InterPro; IPR001156; Transferrin
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                                                                                                                                                                                                                                               GO:0005576; C:extracellular; IEA.
GO:0008199; F:ferric iron binding; IEA
GO:0006879; P:iron ion homeostasis; IEA
GO:0006826; P:iron ion transport; IEA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               357
                                                    357
                                                                                                                                                                        SM00094; TR FER; 2.
E; PS00205; TRANSFERRIN_1;
E; PS00206; TRANSFERRIN_2;
E; PS00207; TRANSFERRIN_3;
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                                                                     EVAA-RARVVW 10
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                                                    EVAARRARVVW
                                                                                                                                                                                                                                                                                                                                                                                   (OCT-2002)
                                                                                                                                   711 AA;
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(TrEMBLrel. 25, I
(TrEMBLrel. 25, I
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  PRELIMINARY;
                                                                                           Conservative
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                                                                                                                                                                                                                                                                                                                                           Saravanan
                                                                                                                                 19 F
711 L
78382 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Primates;
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90.9%;
                                                                                                     79.0%;
90.9%;
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                                                                                                                                                                                                                                                                                                                       (HLF)
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                                                                                                                                   LACTOTRANSFERRIN:
; 547BFC42C9267E67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 39.5;
Pred. No. 34;
                                                                                                     Score 39.5; | Pred. No. 34;
                                                                                                                                                        POTENTIAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Craniata; Vertebrata; Euteleostomi; Catarrhini; Hominidae; Homo.
  PRT;
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  108
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on update)
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                                                                                                                                    CRC64;
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                                                                                                               Length 711;
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                                                                                                                                                                                                                                                                                                                                                                                                        and Sequence
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RESULT

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Best Local S
Matches 6
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Best Local S
Matches 8
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Q38153;
Q1-NOV-1996
Q1-NOV-1996
Q1-JUN-2003
                                                                                                                                                                                                                              Submitted (MAY-1996) to the EMBL; X67865; CAA48064.1; --
EMBL; X97918; CAA66499.1; --
PIR; S43815; S43815.
                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
Alonso J.C., Luder G.,
Submitted (JAN-1998) t
                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDIINE=94172631; PubMed=8126723;
Pedre X., Weise F., Chai S., Lueder G., Alonso J.C.;
Panalysis of cis and trans acting elements required for the initiation of DNA replication in the Bacillus subtilis bacteriophage SPP1.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Clone:OSJNBa0077M12.";
Submitted (WAY-2002) to the EMBL/GenBank/DDBJ databases EMBL; AP005301; BAC24969.1; -. SEQUENCE 108 AA; 10826 MW; 75A593DEF4FEC953 CRC64.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Q8H321;
01-MAR-2003
01-MAR-2003
                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A. Alonso J.C.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Viruses; dsDNA viruses,
Lambda-like viruses.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Oryza sativa (japonica cultivar-group).
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; Liliopsida; Poales; Poaceae;
Ehrhartoideae; Oryzeae; Oryza.
NCBI_TaxID=39947;
                                                                                                                                                                                                                 SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NCBI_TaxID=10724;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Bacteriophage SPP1.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              STRAIN=cv. Nipponbare;
Sasaki T., Matsumoto T., Katay
"Oryza sativa nipponbare(GA3)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            01-MAR-2003 (Tremblrel.
01-MAR-2003 (Tremblrel.
01-MAR-2003 (Tremblrel.
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OSJNBA0077M12.27
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                                                                                                                                            Similarity 6; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                            Biol.
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                                                                      EISAKCRVVW
                                                                                                        EVAARARVVW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FROM N.A.
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Best Local S
Matches 6
"Pyrococcus abyssi genome sequence: insights into ar structure and evolution.";

L Submitted (JUL-1999) to the EMBL/GenBank/DDBJ databa -:- SIMILARITY: TO DEAD/DEAH BOX HELICASE PAMILY.

C -:- SIMILARITY: TO HELICASE C-TERMINAL DOMAIN.

EMBL; AJZ48285; CAB49731.1; --

R PIR; B75127; B75127.

R GO; GO:0005524; F:ATP binding; IEA.

GO; GO:0003676; F:ATP binding; IEA.

GO; GO:0003676; F:ATP binding; IEA.

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R FINTERPRO; IPR001410; DEAD.

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R Pfam; PF00271; helicase_C; 1.

R SMART; SM00487; DEXDC; I.
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A Harris D.E., Holden M.T.G., Churcher C.M., Bentley S.D., Mungall K.L.,
A Cerdeno-Tarraga A.M., Temple L., James K., Harris B., Quail M.A.,
A Achtman M., Atkin R., Baker S., Basham D., Bason N., Cherevach I.,
A Chillingworth T., Collins M., Cronin A., Davis P., Doggett J.,
Chillingworth T., Collins M., Gronin A., Davis P., Doggett J.,
A Chillingworth T., Collins M., Gronin A., Davis P., Doggett J.,
Chillingworth T., Collins M., Gronin A., Davis P., Doggett J.,
Chillingworth T., Collins M., Saunders M., Sagels K.,
A Leather S., Moule S., Norberczak H., C'Neil S., Ormond D., Price C.,
Charles J., Samter S., Sanders M., Saunders D., Seeger K.,
Charles S., Simmonds M., Skelton J., Squares S., Stevens K.,
Charles S., Simmonds M., Skelton J., Squares R., Squares S., Stevens K.,
Charles S., Simmonds M., Skelton J., Squares R., Squares S., Stevens K.,
Completella parapertussis and Bordetella bronchiseptica.";
Nat. Genet. 35:32-40(2003).

W Complete proteome
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Q9V0H2, 
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Archaea; Euryarch
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STRAIN=Tohama I / ATCC BAA-589 / NCTC 13251;
MEDLINE=22827954; PubMed=12910271;
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Best Local S
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Best Local
                                                                                                                                                                                         Q833H9;
Q83H9;
01-JUN-2003 (TrEMBLrel. 24, Created)
01-JUN-2003 (TrEMBLrel. 24, Last sequence update)
01-OCT-2003 (TrEMBLrel. 25, Last annotation update)
---hosphooluconolactonase (EC 3.1.1.31).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    083HQ1;
01-JUN-2003 (TrEMBLrel. 24, Created)
01-JUN-2003 (TrEMBLrel. 24, Last sequence update)
01-OCT-2003 (TrEMBLrel. 25, Last annotation update)
[1]
SEQUENCE FROM N.A.
Audic S.,
                                                                       Tropheryma whipplei (strain Twist) (Whipple's bacillus).
Bacteria; Actinobacteria; Actinobacteridae; Actinomycetales;
Micrococcineae; Cellulomonadaceae; Tropheryma.
MCBI_TaxID=203267;
                                                                                                                                                                                   6-phosphogluconolactonase DEVB OR TWT308.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           InterPro; IPR006148; Gluc gal isom.
InterPro; IPR005900; Phosphogluconlac.
Pfam; PF01182; Glucosamine iso; 1.
TIGRFAMS; TIGR01198; pgl; I.
Hydrolase; Complete proteome.
SEQUENCE 252 AA; 28115 MW; 02046B6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDLINE=22495039; PubMed=12606174;
Bentley S.D., Malwald M., Murphy L.D., Pallen M.J., Yeats C.A.,
Dover L.G., Norbertczak H.T., Besra G.S., Quail M.A., Harris D.l
von Herbay A., Goble A., Rutter S., Squares R., Squares S.,
Barrell B.G., Parkhill J., Relman D.A.;
"Sequencing and analysis of the genome of the Whipple's disease
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SMART; SM00490; HELICC; 1.
ATP-binding; Helicase; Complete proteome.
SEQUENCE 912 AA; 104689 WW; 36F845062D01B811 CRC64;
                                                                                                                                                                                                                                                                                                                                                   Q83GH9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Tropheryma whipplei (strain TW08/27) (Whipple's bacillus) Bacteria; Actinobacteria; Actinobacteria; Actinobacteria; Actinobacteridae; Actinomycetal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Micrococcineae; Cellulomonadaceae; Tropheryma.
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GO:0017057; F:6-phosphogluconolactonase activity;
GO:0016797; F:dydrolase activity; IEA.
GO:0005975; P:carbohydrate metabolism; IEA.
GO:0006998; P:pentose-phosphate shunt; IEA.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                74.0%;
75.0%;
     Robert
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  c:,
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Pred. No.
                                                                                                                                                                                                                                                                                                                                                PRT;
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  Ogata H.,
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  Suhre
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  Drancourt M.,
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                                                                                                    Matches
                                                                                                                                               Query Match
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Best Local (
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SMART; SM00384; HAMP; 1.

SMART; SM00388; HiskA; 1.

PROSITE; PS50885; HAMP; 1.

PROSITE; PS50109; HIS KIN; 1.

NON TER 372 372

SEQUENCE 372 AA; 41488 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    "Accessory proteins functioning selectively and paiosynthesis of [NiFe] hydrogenases in Thiocapsa Bur. J. Biochem. 270:2218-2227 (2003).

EMBL; AV15292; AAN87038.1; -.
GO; GO:0016020; C:membrane; IEA.
GO; GO:0016301; F:kinase activity; IEA.
GO; GO:0000155; F:two-component sensor molecule a GO; GO:0007165; P:signal transduction; IEA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        in small genome bacterial pathogens";
Submitted (JTL-2002) to the EMBL/GenBank/DDBJ databases.

EMBL; AE016851; AA04405.1;
GO; GO:0017057; F:6-phosphogluconolactonase activity; IEA.
GO; GO:0015777; F:hydrolase activity; IEA.
GO; GO:0005975; P:carbohydrate metabolism; IEA.
GO; GO:0005978; P:pentose-phosphate shunt; IEA.
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InterPro; IPR005900; Phosphogluconiac.
Pfam; PF01182; Glucosamine_iso; 1.
TIGRPAMs; TIGR01198; pgl; I.
Hydrolase; Complete proteome.
SEQUENCE 291 AA; 32564 MW; FC80C8A
                                                                                                                                                                                                                                                                                                                                                                                  InterPro; IPR005467; His kinase.
InterPro; IPR003661; His kina N.
Pfam; PF00672; HAMP; 1.
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Kovacs K.L.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Thiocapsa roseopersicina.
Bacteria; Proteobacteria;
Chromatiaceae; Thiocapsa.
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01-JUN-2003
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STRAIN=BBS;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                InterPro; IPR003660; HAMP.
                                                                                                                           ocal
308
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                                                                                               Similarity 6; Conserv
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                                               VAARARVVW 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Fodor B.D., Rakhely G., Kovacs A.T., Arvani
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3 (TrEMBLrel. 24,
3 (TrEMBLrel. 25,
                                                                                                  Conservative
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                                                                                                                                                                                                    41488 MW;
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66.7%;
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75.0%;
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Last annotation update)
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Pred. No. 44;
2; Mismatches
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                                                                                                                        Score 37; DB
Pred. No. 56;
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                                                                                                    Mismatches
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                                                                                                                                               2; Length 372;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   activity; IEA.
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RESULT
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AC Q86E95
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RESULT
Q7VD97
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Best Local
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Best Local
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Submitted (JAN-2003) to the EMBL/GenBank/DDBU databases.

BMBL, AY223325; AAP06332.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Q86E95;
01-JUN-2003
01-JUN-2003
01-JUN-2003
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01-OCT-2003 (TrEMBLrel. 25, Created 01-OCT-2003 (TrEMBLrel. 25, Last so 01-OCT-2003 (TrEMBLrel. 25, Last ar Putative transport protein. uncultured Acidobacteria bacterium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            population genomics.";
Submitted (APR-2003) to the EMBL/GenBank/DDBJ databases.
EMBL; AY281352; AAP58499.1; -.
SEQUENCE 365 AA; 38767 NW; 07C6AB9231633C08 CRC64;
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Schistosoma japonicum (Blood fluke).
Sukaryota; Metazoa; Platyhelminthes; Trematoda; Digenea; Strigeidida;
Schistosomatoidea; Schistosomatidae; Schistosoma.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Quaiser A., Ochsenreiter T., Lanz C. Eck J., Schleper C.;
"Acidobacteria form a coherent but h bacterial domain and exchange genes
                                                                                                                                                                          01-OCT-2003 (TrEMBLrel. 25, Created)
01-OCT-2003 (TrEMBLrel. 25, Last sequence update)
01-OCT-2003 (TrEMBLrel. 25, Last annotation updat
Uncharacterized conserved protein.
                                                                                                                                                                                                                                                                                                               Q7VD97;
01-OCT-2003
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Quaiser A., Ochsenreiter
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         Prochlorococcus marinus.
Bacteria; Cyanobacteria;
Prochlorococcus.
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21357 MW; F2371079F65AE25A CRC64;
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85.7%;
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Pred. No. 86;
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genes with Rhizobiales: Evidences fr
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"Genome sequence of the cyanobacterium Prochlorococcus marinus SS120, a nearly minimal oxyphototrophic genome.",
Proc. Natl. Acad. Sci. U.S.A. 100:10020-10025(2003).
EMBL; AE017162; AAP99531.1; -.
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STRAIN=SARG / CCMP 1375 / SS120;
STRAIN=SARG / CCMP 1375 / SS120;
MEDLINE=22810154, PubMed=12917486;
Dufresne A., Salanoubat M., Partensky F., Artiguenave F., Axmanı
Barbe V., Duprat S., Galperin M.Y., Koonin E.V., Le Gall F.,
Makarova K.S., Ostrowski M., Oztas S., Robert C., Rogozin I.B.,
Scanlan D.J., Tandeau de Marsac N., Weissenbach J., Wincker P.,
                                                                                                                                  "Genome divergence in two Prochlorococcus ecotypes reflects oceanic niche differentiation.";
Nature 424:1042-1047(2003).
EMBL; BX572095; CAE20301.1; -.
                                                                                                                                                                                     MEDIINE=22825698; PubMed=12917642;
ROCAP G., Larimer F.W., Lamerdin J., Malfatti S., Chain P.
Ahlgren N.A., Arellano A., Coleman M., Hauser L., Hess W.F.
Johnson Z.I., Land M., Lindell D., Post A.F., Regala W., S
Shaw S.L., Steglich C., Sullivan M.B., Ting C.S., Tolonen
Webb B.A., Zinser E.R., Chisholm S.W.;
                                                                                                                                                                                                                                                                                                                             Prochlorococcus marinus
Bacteria; Cyanobacteria;
                                                                                                       Hydrolase; Complete proteome.
SEQUENCE 473 AA; 51395 MW;
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7; Conserv
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408 AA;
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putative magnesium transport
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50.0%;
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                                                  Score 36; DB
Pred. No. 1.1e
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Pred. No.
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annotation update)
transport protein (
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96;
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